The Builder.

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A Dining Hall ..... Mr. A. D. Clark, Architect.
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Egyptian Antiquities.

HAPPILY, the time has gone for ever when the rulers of Egypt looked upon temples and pyramids merely as crumbling masses of stone or as convenient stores of material for building purposes. In the present era of enlightenment the people of Egypt and the world at large have reason to be grateful for the care taken by the Government to preserve the remains that serve in a measure to link the XXth century with remote antiquity. It is to be regretted, however, that those who are responsible for the control of Egyptian finances have hitherto failed to give adequate support to the work, and it is to be hoped that no false notion of economy or international jealousy may be allowed in future to cramp the efforts which are being made to preserve the ancient monuments to the last fragment. In the last Report of M. Maspero—Director-General of the Antiquities Service—we notice again and again the complaint that, owing to the lack of sufficient funds, it is impossible to exercise the complete supervision that is desirable for the protection of excavated ruins, and the prompt detection of faults, and, when faults are detected, to undertake or to finish the necessary repairs in time to prevent disaster. In connexion with protective work, it must be remembered that immediate attention is always essential, otherwise the ceaseless action of the atmosphere and the sand, the continual depredations of unscrupulous and greedy natives, and, we are sorry to say, of equally unscrupulous tourists, must inevitably result in serious injury to monuments that can never be replaced.

The tour of the Director-General in the winter of 1901-1902 showed that damage still continued at many of the sites. In some cases this was due to natural decay, and, in the case of Beni-Hassan, to a violent gale, which flooded the tombs and caused injury to several pictures. At El-Amarna, however, a portion of the painted pavement discovered by Professor Flinders Petrie was wantonly destroyed by repeated blows from the umbrella of an American lady visitor, "before either the ghafir or the two European travellers who reported the deed could intervene." It also became evident to M. Maspero that in several tombs of the Theban Kings, and especially in that of Seti I., the vibrations caused by the steps of the parties of tourists who visit the buildings were slowly but surely damaging these monuments, by causing portions of the frescoes on the walls and roofs to fall down. During the winter of 1902 several fragments of roof masonry and a column were displaced in this way. In other cases it appears that damage might have been avoided if adequate measures could have been taken to guard against impending danger at the proper time.

After his inspection M. Maspero carefully noted the points in each locality where danger was most imminent, and carried out the most pressing works of protection so far as permitted by the funds at his disposal. At the Temple of Seti I. at Abydos and at that of Rameses III. at Karnak it was found possible to strengthen some of the architraves and roof slabs by iron girders, in accordance with arrangements made after the inspection of 1901; but unfortunately it happened that at several other places the material and workmen arrived too late for the repairs to be executed. In the small Temple of Thoutmosis III. at Medinet-Habu two of the slabs in the steps of the sanctuary fell in December, 1902; but the worst damage occurred at Kom Ombo. A huge mass of sand and *débris* taken from the area, or floor, of the temple was piled up in the courtyard, and the attempt was foolishly made to retain it by a wall of dry bricks built on the remains of the ancient girdle wall. It would have been far more easy, as well as far less troublesome, if the foreman in charge had kept down the height of this mound by spreading the material over a large area; then it would have been perfectly safe, and the labour of building a brick wall could have been avoided. When the condition of things came to the knowledge of a responsible official instructions were immediately given to remove the mass of sand pressing against the eastern wall of the courtyard, but, owing to want of money, the work was carried on so slowly that four months later the brick wall broke down suddenly, near the place where the figures of the Emperor Macrin and his son Diaduménian are carved. A stream of sand poured through the breach and displaced some twenty of the blocks of the ancient wall. The sand was cleared out as soon as possible and the stone wall was shored up with beams, the rubbish being thrown into the Nile so far as the available resources permitted. But the danger was not yet over, and it was

proposed to recommence the clearing process in 1903, and, if necessary, to level the entire mound right down, or, at least, those parts of it which pressed against the ruins of the temple on the east and south sides.

At Edfu a still greater danger threatened the magnificent Temple of Horus, which, in spite of the 2,000 years that have passed over it, is still in a state of almost perfect preservation. This peril was detected by the Director-General, who noticed that the foundations of the western wall were perceptibly sinking. He ordered the threatened portion to be kept under daily observation, with the result that on returning at the expiration of six months he was convinced that the damage had made perceptible increase and required immediate attention. In December, 1902, the top of the wall was overhanging at the worst place by no less than 0.59 mètres, so that it was deemed necessary to demolish entirely a length of as much as 70 mètres, from the north-west angle to the gateway leading to the western Colonnade of the court. The five most northerly columns of the Colonnade were also much damaged, together with the corresponding part of the wall, and required immediate repair. It was estimated that the cost of the necessary works would be 1,200E*l*. for restoration of the wall and 400E*l*. for reinstating the columns. Fortunately, owing to the saving effected in the estimated cost of the works at Philæ, it was not necessary for M. Maspero to ask for an additional credit, and the Ministry of Public Works immediately authorised him to apply the sum of 1,000E*l*. to the works required at Edfu. The necessary material and tackle having been collected, the work was commenced in March, 1903, and the damaged wall has now been rebuilt, but it is probable that the restoration of the columns will not be completed until the year 1905.

For the purposes of the Antiquities Service, Egypt is divided into two districts:—(1) The North Inspection and (2) the South Inspection, each of which is under the supervision of a Chief Inspector. There is so marked a difference in the character of these inspectorates that each presents special difficulties and demands special treatment. In the South Inspectorate, from Nag-Hammadi to the Second Cataract, the cultivated lands are restricted in area and the population is extremely sparse. Consequently, the ancient sites have suffered comparatively little; complete or only partially ruined temples and cities abound on both banks of the Nile; and the Chief Inspector is able to devote nearly the whole of his energy to the preservation and protection of the monuments. Hence he has been able, at Edfu, to superintend the erection of girders for the purpose of strengthening the roofing of the Vestibule and of the Hypostyle Hall in the Temple of Horus; at Kom Ombo, to undertake the repairs already mentioned; and at Thebes, to see to the erection of wooden doors in several tombs of the Sheikh Abdel Gournah, and to the installation of electric light in six of the Royal tombs.

Those who have visited these tombs must have been struck with the marked dilapidation caused by the torches and candles formerly used by tourists, and the same effect attracted the notice of M. Maspero on his return to Egypt two or three years ago. After careful consideration he came to the conclusion that the best way of preventing further injury would be to illuminate the tombs by electric light. The chief difficulty in the way of this proposal was, as usual, the lack of funds. This obstacle being overcome, a contract was given to an electrical engineer at Luxor, who undertook, for the sum of 560E*l*., to provide and instal the necessary plant for lighting the six tombs selected for an experimental installation.

After full consideration it was decided that the generating machinery should be erected in the tomb of Rameses XI., of which the sculptures had already almost entirely disappeared. The entrance and the vestibule were thoroughly cleared and the walls were properly repaired for the installation of the plant, which was completed in March, 1902, and taken over a few days afterwards by the chief electrical engineer of the Public Works Department. Everybody who has visited the Royal Tombs since the new system of lighting was installed agrees that it has effected a great improvement, not merely in the lighting of the paintings and sculptures, but also in the condition of the atmosphere, which in former times was almost unbreathable for an hour or two after the visit of every party of tourists, armed with torches, candles, and magnesium lamps. Further, to complete the organisation of the Valley of the Kings, barriers have been put up to facilitate the inspection of tourists' tickets; the paths have been cleared of rubbish and clearly marked out by large stones, and a covered shed has been erected, where about a hundred donkeys can be sheltered while their riders are going the round of the tombs.

In the Northern Inspectorate, from Nag-Hammadi to the sea, the conditions are totally different from those prevailing in the district to which the foregoing remarks apply. There are but few temples, those of Abydos being the best preserved. Nearly all the sites of ancient cities have been ravaged by the inhabitants of modern towns and villages, who have ruthlessly torn down the ruins to provide material for building their houses. Hence, in the North Inspectorate, the great trouble is to protect the ancient sites and prevent the taking of earth and the sale of materials, and to keep at bay the curio hunters and their agents, who, in many places, have organised marauding bands for the spoilation of cemeteries, showing fight when surprised by the Government watchmen. In this part of the country a small necropolis in the Gebel Abou-Féda, near Koseir-el-Amarna, and the small Temple of Ménephthah at Echmounein have been cleared out, in addition to the repairs at Abydos previously mentioned. More work would have been done at the latter place but for the simple reason assigned by M. Maspero—"*faute d'argent*." The state of the laws and the general prejudice existing in favour of the curio poacher are great obstacles to the preservation of the antiquities. It is satisfactory to learn that a new law, intended to regulate various questions connected with antiquities, was drafted in 1902, and since then has been considered by the Government. In order to apply this law to Europeans, however, the consent of the fourteen Powers will be required, and, Sir William Garstin remarks, "this consent will necessitate a very considerable lapse of time to obtain." In the meantime the best policy for the authorities is to afford more generous financial support to the Antiquities Service, so that the monuments and other treasures scattered over the face of the country may be still more rigorously watched.

A considerable amount of attention was devoted by the Service to the exploration and clearing of buildings at Sakkarah, in consequence of the previous examination of various remains in this vicinity. M. Maspero had already formed certain theories in connexion with the Royal Tombs of the Memphitic epoch, and the work of clearing, around the Pyramid of Ounas in particular, was undertaken partly for the purpose of throwing light upon the correctness of these theories, and partly to enable tourists visiting Sakkarah to form a more complete idea of the original aspect of the buildings in the immediate vicinity of the Pyramid. In 1902 the Pyramid itself was completely exposed, and good progress was made with the clearing of the chapel and the vestibules attached to this building. In the course of this work four hypogæa were discovered containing a number of valuable relics, comprising blue enamelled statuettes and funeral amulets of gold, gilded silver, and precious stones. But the great discovery of the year was made in the Eastern Galleries. M. Maspero had been struck in the previous year with the extremely ancient appearance of these galleries, and this characteristic suggested to him the possibility that they might belong to some period still more remote than the Pyramid of Ounas itself. The officials collected several helmets of clay, identical with those found by Professor Flinders Petrie and M. Amelineau at Abydos, and bearing the names of two very ancient Kings, Ranibou and Hatpousakhmoui. Thus the archaic period comes to light at Sakkarah as well as at Said, and it is now considered advisable to re-examine all the diggings of M. Mariette in the plain of the Pyramids, with the object of bringing to light the Thinite relics which were most probably overlooked by that explorer.

At Karnak the repair of the columns in the Hypostyle Hall and the clearing of the South-east Court has been continued by Government officials. New foundations for the eleven columns were completed in 1902, and stood the test of the inundation, after which the columns were rebuilt up to the height of 6 mètres, their final completion having been deferred until the autumn of 1903. The excavations in the South-east Court have resulted in several interesting discoveries, among them some twelve rose granite colossi, one of Ousirtasen IV., a hitherto unknown Pharoah of Dynasty XIII., some limestone blocks covered with magnificent sculptures from a temple of Dynasty XII., and a building of Amenothes I. Thoutmosis III. evidently set little store on the works of his predecessors, for the statues

and carvings were used by him as mere filling when the floor of the court was laid. Should more of these remains come to light M. Maspero proposes to reconstruct at Karnak the building to which they belonged, but he fears the others may have been used for the foundations of the Pylon, in which case they would probably be lost for ever.

At Philæ the works had to be pushed on very rapidly, as, owing first to the length of time required for making good the foundations, and then to the outbreak of cholera, nothing could be done till the middle of October, and by December 3, when the repairs were finished, a part of the island was already under water. M. Barsanti, who was made responsible for the execution of the work, took down and rebuilt the pavilion of Nectanebo, of which the columns were tottering, at the same time replacing in their original positions all the blocks scattered about the site. He completed the small Temple of Arsnoufis, cleaned and repointed the masonryof the portico and of the Great Temple, and rebuilt the propylæa of the chapel of Hathor.

M. Maspero carefully inspected the buildings of Philæ in December, 1902, and in the recently-published report he expressed the opinion that every precaution was taken to make the buildings fit to undergo their long immersion in the water, but it appears that some of the sandstone blocks, having been completely dessicated by the dry air through eighteen centuries, absorbed the water with a rather alarming rapidity. In one wall, to the east of the western gate, the moisture showed itself to have risen by capillary attraction as high as 2 mètres or more above the level of the reservoir. The effect of the water on the soil was also very marked. In some places the ground was distinctly softened and yielded readily to the foot, and it is feared by M. Maspero that much of the silt may be carried away, and that the Kiosque of Trajan may suffer greatly in consequence.

Nevertheless, M. Maspero said it was impossible to predict yet what might happen, or to be certain as to the duration of the monuments covering the island, until careful examination had been made after the return of the water to its ordinary level. By this time, we presume, such examination has already taken place, but, of course, the result will not be known until the publication of the next report of the Public Works Department.

In conclusion, we may add that by far the most important work conducted during the year 1902 was the transfer of the National collections from the Gizeh Museum to the new Egyptian Museum building at Kasr-el-Nil, Cairo. Preparations for this work were commenced two years before, and the result was that the whole of the objects of art, many of them of the utmost delicacy, and others of enormous bulk and weight, were transported with astonishing celerity. Most material assistance was afforded by a temporary line of railway connecting the two buildings. For the conveyance of the larger monuments, special tracks and landing stages were constructed on each side of the Nile, and lighters were provided so that the objects could be readily run down to the river, floated across, and carried direct to their destination. The preparation of the summary catalogue progressed *pari passu* with the transference of the collection, and the whole operation was so admirably organised and carried into execution that the public were only excluded from the Museum during three months. The removal of the collection was commenced in December, 1901, and completed by the middle of July, 1902, the arrangement and classification of the objects being finished in the early part of September in the latter year.

Some idea of the number and weight of the different articles may be gathered from the statement that over 500 cases of all sorts and sizes were specially made, and 100 "cafas" were bought to convey pottery. Several of the large stelæ weighed from twelve to sixteen tons each, whilst at least a hundred of the various articles weighed from one to ten tons. The successful completion of so huge a task in so short a time, and without any loss or damage to the collection, entitles M. Maspero to the gratitude of all interested in archæology.

NOTES.

Some Private Bills in Parliament.

THE private bills which are to be introduced this session are likely to have even a smaller chance than usual of passing, for the life of the present Parliament is so obviously precarious and certainly will be short. Mr. Paulton has a bill to amend the law relating to trade unions and trade disputes. This may give rise to an interesting discussion, but only a bill introduced by the Government on this subject has any chance of becoming law. The same may be said of Mr. Sinclair's bill to establish a Minister of Commerce, and also of Sir F. Powell's bill to amend the acts relating to the pollution of rivers and streams. It is probable that Mr. Vaughan Davies's bill to enable Parliamentary powers for Wales to be obtained by provisional orders instead of by Statute will require a good deal of support. There is no doubt that too much money is spent in contests in London over private bills. We fail to find in the list of members' bills as yet introduced that of Mr. Fletcher Moulton in regard to the law of light. It would, however, have no chance of becoming law, and if the Institute of Architects desires legislation it would probably be best to endeavour to get the next Government to take up the question.

The Baltimore Fire.

WE have the sad news of another great conflagration in an American city, which seems almost a parallel to the great Chicago fire of a good many years ago. Whether, as in the case of Chicago, there was anything in the method and materials of construction employed in Baltimore to render the city peculiarly liable to destruction by fire we do not as yet know; but the recurrence of these great fires from time to time seems to indicate that there has been something much amiss with building construction and building law in the United States in past times, of which they are now reaping the disastrous consequences. The scene of the conflagration at Baltimore is situated in the city proper and Spring Garden quarter, in the south parts of the entire city, and adjoins the west side of the now embanked stream known as Jones's Falls, which, running north and south into the basin of the harbour, divides the thirty-two square miles of the city into two nearly equal portions. The area laid waste extends some three-quarters of a mile westwards from Jones's Falls to Liberty-street, where the fire broke out in, it is said, the basement of Hurst and Co.'s store, and about half a mile, north and south, between Fayette-street and Pratt-street respectively. Within that space lie the Central Markets, Customs House, Stock Exchange, Post-office, City Hall, and Corn and Flour Exchange; the Equitable, Calvert, and Continental Trust Company's buildings; the Baltimore and Ohio Railroad offices, Holliday-street Theatre, several leading newspaper offices, large hotels, and other important buildings, together with the business and commercial quarter of the city, including the lumber district near O'Donnell's Wharf.

The Garden City.

THE experiment called the Garden City is one of such great importance that its progress will be watched with the utmost interest and sympathy. But, however desirable optimism is, it is equally desirable that the difficulties to be overcome should not be lost sight of; otherwise, if the scheme does not fulfil all the hopes of the promoters, many good results and suggestions to be obtained from it may be overlooked. And we cannot but fear that the promoters have scarcely realised the difficulties of their scheme. In our last issue, for example, a sanguine correspondent points out how a manufacturer "who moves to the Garden City" will have many advantages—a cheap site, no premium to ground landlords, etc. But manufacturers do not lightly "move" their factories, and they look in so doing for such points as good railway and canal access, good coal supply, and so forth. Sunlight City, otherwise the factories and houses belonging to the Sunlight Soap Company, is placed on the banks of the Mersey, so that the company's works are in direct communication with the sea traffic of the world. A pleasant agricultural site in Hertfordshire has no such advantages. Again, is a healthy manufacturing city a garden city at all? Is not the name a little too ideal?

Householders and Nuisances.

SEVERAL cases have come before the courts recently on the question of what degree of inconvenience individual householders must suffer from machinery employed for public purposes being used in their vicinity. The latest case is Colwell *v.* St. Pancras Borough Council. In May, 1903, the defendant Council began to use new machinery in a generating station for electric light. The plaintiffs, certain lessees and occupiers of neighbouring houses, complained of the nuisance caused by the noise and vibration, and eventually took proceedings. The only substantial defence was that the inconvenience was only temporary, and that the defendants only required time to enable them to experiment and cause the engines to

run smoothly. The court, however, held that the annoyance was not temporary, but was calculated to work material injury to the plaintiffs' property. It is to be observed that in this case the provisional order under which the defendants' undertaking was carried on expressly left their common law liabilities unaffected, and hence no difficulty arose, such as occurs when work is being done in pursuance of statutory powers in determining to what extent the inconvenience attending the working of the undertaking is authorised by such powers.

By-Laws and London Lodging-houses.

TWO IMPORTANT cases have been decided on the validity of certain by-laws made by local authorities under section 94 of the Public Health (London) Act, 1891, Nokes *v.* Mayor, etc., of Islington and Stiles *v.* Galinski. The by-laws regulate the cleansing and ventilation of lodging-houses, and in both cases "lodging-house" is defined by the by-laws as including "a house or part of a house which is let in lodgings or occupied by members of more than one family," and in each case the by-laws provided that the landlord should in the month of April in every year cause the premises to be cleansed, whitewashed, etc. In Stiles's case the by-laws defined the word "landlord" as "the person (whatever may be the nature or extent of his interest in the premises and whether he resides on the premises or not) who receives or is entitled to receive the rack-rent." In the Islington case the definition was rather wider, embracing anyone by whom or on whose behalf the premises or part of them are let, and who is entitled to receive the profits. The Divisional Court have decided against the validity of the by-laws in both cases on the ground that under them persons not morally responsible are made liable to penalties without notice of the breach of the by-laws. It is to be observed that the by-laws include any houses occupied by more than one family, and, as Mr. Justice Wills pointed out, this would include houses of a high class let to several professional men and in such cases the person receiving the rack-rent would be placed under an intolerable burden of supervision. If the by-laws only included lodging-houses of a particular class, and made the "keeper" or some person morally responsible liable, after notice, for their breach, there seems no reason to doubt they could legally be so framed. It was contended that the particular time of year fixed by the by-law was also unreasonable, but the majority of the Court negatived that contention.

No. 27, Upper Baker-street (Mrs. Siddons's Home).

THE demolition of Mrs. Siddons's house in Upper Baker-street forms a beginning of the clearance that will be made between Clarence Gate and the Marylebone-road for the reconstruction and enlargement of Baker-street railway station. No. 27 stands at the angle of Upper Baker-street and Allsop-place. Mrs. Siddons removed thither in 1817 from the Farm at Westbourne Green, and resided there until her death in 1831. She had taken a formal farewell of the stage on June 29, 1812; her latest appearance in public, at Covent Garden, as "Lady Randolph," took place on June 9, 1818, when she was living in this house. In the garden there she built the annexe for her sculpture studio and dramatic readings, which faces the entrance into Regent's Park at Clarence Gate. It is said that the opening at the end of Cornwall-terrace was planned by Nash, at the Prince Regent's request, in order that Mrs. Siddons might enjoy an uninterrupted view of the park and the country beyond. She left her interest in the lease of the house to her daughter Cecilia; at the sale of the effects in November, 1897, some articles were disposed of that had belonged to her, and were associated with her career as an actress; the painted glass on a window of the staircase had been designed by her. Until lately the house was occupied as the Portman Estate office.

Royal Academy Lectures.

THE main object of Mr. Colton's lecture on Sculpture on Monday afternoon was to impress on students that sculpture was a most difficult and exacting art, not to be approached but in a spirit of labour and self-sacrifice, and which must to a great extent be its own reward. A student who had not enthusiasm for sculpture had better pause before committing himself to it. In sculpture there was no question of real or ideal, for absolute imitation of nature was required; and if one could get near to reproducing the material beauty of nature one might be thankful; though he observed later (and quite truly) that the subject of a work of sculpture should be an idea rather than a fact. A sketchy style was impossible for sculpture, unless you could insure it being never seen but from one point of view. Clear vision and precise and finished execution were, however, of more value than imagination. We should prefer to say that imagination is of little value without these faculties; indeed, Mr. Colton put it at the close of his lecture in words we entirely accept—viz., that sculpture should represent a fine thought finely executed; but once the thought was captured, the rest was *craftsmanship;* and a little thought finely executed was better than a great one badly told. Rules of the proportions of the figure were out of date; they had done much to kill life out of the art in past times, and the works done under that influence had mostly lost their interest now. In this connexion, also, it was an advantage that the Academy had no "system of modelling"; systems were a clog to art, a temptation to mistake the means for the end. Referring to some questions of technical treatment, he was afraid that bones were the bugbear of the modern English school of sculpture. They must, no doubt, know the bone framework of the body, but they must remember that it was everywhere covered with skin, even where it came nearest the surface; and they had to give to the torso, and to the hands and feet (the latter too often carelessly treated in modern sculpture) the suppleness of life. Sculpture was nothing if not vital; let them beware lest in copying life they ended in representing death. Referring to an absurd recent criticism to the effect that there were no limitations in sculpture but the will of the sculptor, Mr. Colton gave some amusing examples of what this doctrine might lead to if acted on. The beauty of nature, however, was so various and so abundant that a sculptor could never hope to touch any but a small part of it. In answer to the lecturer's appeal "Why was nature made beautiful?" however, we should be inclined to suggest that this is confusing cause and effect. Blue sky, and green foliage, and the human form at its best, are beautiful to us because our whole nature and sympathies have been fashioned by our surroundings; whether they are beautiful in the abstract, or whether there even is such a thing as abstract beauty, might be a question. But probably most artists would give the reply of Horatio—"It were to consider too curiously, to consider so."

The Goupil Gallery.

AT the Goupil Gallery there is a collection of oil-paintings, chiefly landscape, by Mr. G. Leon Little, an artist of whom we have not heard much, though he has, we believe, been an occasional exhibitor at the Goupil Gallery, but whose work fully justifies a special exhibition. These are pictures in the best school of landscape-painting—the school of broad execution in which the spirit of the landscape is given without any prosaic realism, though without any of that exaggerated coarseness of style which is affected by some of the most "modern" landscape artists. The first work in the catalogue, "Mowing Barley," a small landscape with horses in the foreground, shows at once the feeling of a true landscape artist. In this and many other works in the room one recognises that the artist has not only the sentiment of landscape, but that he possesses that sense of style which is apparent in the fact that everything is in keeping; the degree of convention which is chosen is consistently maintained. This is especially well illustrated in "Under the Trees" (4), perhaps the best work in the collection in an artistic sense, though there are others which are more effective in the picture-gallery sense. There is a certain suggestion of the manner of an older day in the charming picture "The Farm Pond" (19), in which the treatment of the trees somewhat recalls Gainsborough, though it is not so conventional. There are a few among the smaller works which are inferior to the others, but of the collection as a whole it may be said that almost every one is worth looking at. Among those which we specially liked, in addition to the examples already mentioned, are "Evening" (26); "The Quay, Rye" (28); "Mid-day, Rye" (2), admirable in its sense of colour; "A November Evening" (12); and "Cliburn Moss, Westmoreland" (49).

Drawings at the Leicester Galleries.

A MIXED collection of drawings by eminent artists at the Leicester Galleries is chiefly remarkable for a collection of the drawings of Mr. Frederick Sandys, which occupy the greater part of two walls of the room. These are mainly drawings of ideal women and girls, occasionally with the name of a recognised mythological personage, as "Cassandra," but for the most part ideal figures which

speak for themselves, and in which the titles serve only to indicate the mood in which they are to be taken. These drawings are remarkable not only for the beauty of the heads, but for their extraordinary and exceptional execution, the method of which it is rather difficult to understand, and which seems different from anything else one has met with. It appears to consist, in some cases at any rate (such as the hair in "Gertrude"), in light colour tints worked over with a fine pencil; the result is a most delicate and unusual effect. In "My Lady Greensleeves," a child figure, the manner in which the lights and texture of the satin dress are conveyed is most remarkable, and quite a puzzle in regard to method, though there is no appearance of anything laboured about it. Mr. Sandys has had evidently a kind of inspiration of his own in technique, and we are indebted to the managers of the gallery for giving us the opportunity of seeing so much of the collected work of an artist of such curious individuality of genius. Among the other drawings the most noteworthy are the series of symbolical heads in coloured chalk by Mr. Henry J. Stock, which represent a new departure in the work of an artist who has so long endeavoured, with varying but sometimes with unquestionable success, to make the figure the medium for expressing a highly idealised poetic conception.

Mr. Abbey's Shakspeare Illustrations.

In another room in the same galleries is a large collection of drawings illustrating the comedies of Shakspeare, by Mr. E. A. Abbey. These are, we take it, all drawn rather large (in comparison with their degree of finish) for reduction as book illustrations, hence they look somewhat rough and straggling in execution. This one can understand and allow for; but taking them as representations of Shakspeare's characters, they are very disappointing—or would have been if what we have already seen of the artist's published illustrations of this class had not forewarned us. Mr. Abbey has painted several very fine pictures on a large scale from Shakspeare's tragedies; but when he illustrates the comedies in this book-illustration form he seems to lose all perception of the dignity which belongs to the more important personages represented in them. He shows us Portia, a great lady who was courted by princes, as a pretty middle-class girl with no manner; Falstaff (who with all his vices was a gentleman) as a fat tavern clown; Malvolio as a kind of scarecrow, whereas Malvolio was a highly respectable person; Maclise's picture is a far better realisation. Parolles is made a kind of roaring Bobadil—in reality he was a great dandy—"that Jackanapes with scarfs," he is called in one scene; and Orlando, in the scene just after he is supposed to have thrown the Duke's wrestler, is such a wretched creature that one would think a feather would knock him down. In short, Mr. Abbey understands Shakspeare's tragedy but he does not understand Shakspeare's comedy, and turns it into burlesque. By far the best thing in the collection is a scene which is essentially tragic—that where Angelo expresses his guilty passion to Isabella. Here the evil face of the man and the horror of the nun as she comes to realise his meaning are expressed with great power, and Mr. Abbey might make a very fine picture out of this study. Among the rest, he has given us a very pretty Anne Page, and he has made something of Caliban; but in the main we should say that these drawings are not so much Shakspeare illustrated as Shakspeare travestied.

THE ARCHITECTURAL ASSOCIATION.

An ordinary fortnightly meeting of the Architectural Association was held on Friday evening last week in the Meeting Room of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street, W. Mr. Arnold Mitchell, Vice-President, took the chair, and explained that Mr. Hare, the President, was sorry not to be with them that evening. Mr. Hare had been unwell, and, though better, he had no voice and felt he would not be a proper chairman for the occasion.

The minutes and some nominations having been read, the following gentlemen were elected members of the Association:—Messrs. L. F. Jones, W. S. Gorringe, W. Acworth, W. W. Scott-Moncrieff, H. I. Merriman, J. S. Courtauld, and J. L. Fouracre.

New Premises Fund.

The Chairman then announced the following further donations to the New Premises Fund:—Messrs. Mark Fawcett and Co., 21*l.*; J. K. Hunter, 2*l.* 2s.; Arthur J. James, 2*l.* 2s.; R. Douglas Wells, 2*l.* 2s.; A. E. Anscombe, 1*l.* 1s.; A. Campbell, 1*l.* 1s.; F. G. Christmas, 1*l.* 1s.; B. Dicksee, 1*l.* 1s.; A. Ebbs, 1*l.* 1s; and Horace Barry, 1*l.*

A Bequest.

The Chairman also announced that 750*l.* had been bequeathed to the Association by the late Mr. H. Saxon Snell for the foundation and maintenance of a Triennial Scholarship. Details had not yet been received, but it was an agreeable announcement to make that so generous a donation had been made to the Association.

Mr. Louis Ambler, Hon. Secretary, proposed a vote of thanks to Mr. John Belcher, A.R.A., for allowing a party of members to visit the Royal London Friendly Society's Offices; also to Mr. A. H. Belcher for kindly attending the visit on Saturday, January 23. The vote of thanks having been accorded,

Mr. Ambler announced the following donation of lantern slides:—Thirty-six slides of Gothic work, presented by Mr. G. S. Fleetwood; thirty slides of Gothic work, presented by Mr. F. R. Taylor; and sixty slides of Westminster Abbey and St. Paul's, presented by Mr. Alan Potter.

A vote of thanks was passed to the donors.

It was also announced that a Discussion Section meeting will be held on February 17, when a paper by Mr. Walter Williams will be read on "The Legal Position of an Architect."

Cottage Homes.

Mr. W. A. Harvey then read the following paper, entitled "Cottage Homes," which was illustrated by a large number of lantern views:—

The subject of Cottage Homes that you have done me the honour of inviting me to speak upon this evening I cannot approach without being apprehensive that it is one with which my audience must already be well conversant; and, in submitting to you, for your consideration, observations resulting from my own experience, it must not be imagined that I regard them as being pregnant with originality, or yet that I presuppose the ignorance of my listeners.

It is my intention, as will probably have been anticipated, to take as the reference basis of my remarks the project in which I am directly interested. I refer to the scheme of the Bournville Village Trust, whose architect I have been since its inception.

By way of introduction, let me briefly state that the village of Bournville, which lies in the north-east of Worcestershire, four miles south-west of Birmingham, is of quite recent development, nearly the whole of it having been built since 1895. The estate, which is now administered by a trust, owes its existence to Mr. George Cadbury, of Northfield, the senior member of the firm of Cadbury Brothers Ltd. Mr. Cadbury's object is an endeavour to alleviate the evils which arise from the insanitary and insufficient housing accommodation supplied to large numbers of the working classes and to secure to workers in factories some of the advantages of outdoor village life, with opportunities for the natural and healthful occupation of cultivating the soil. When the village was handed over to the trustees in December, 1900, something like 350 cottages had been erected. Since then building has been steadily proceeded with, the total now being over 500. Most of those built before 1901 have two sitting-rooms, a scullery, three bedrooms, and the usual conveniences. Larger ones of later date have four, five, and six bedrooms, and a bathroom supplied with hot and cold water. During the last two years several cottages have been built with one large living-room instead of two smaller ones, a scullery with bath sunk in floor, or disposed of in other ways, to economise space, three bedrooms, and in some cases an attic. Others are now built with two bedrooms, for small families.

There is an average garden space allowed each house of 600 square yards, which is found to be as much as one man can attend to. The rents range from 5s. 6d. a week, rates included, to 12s., rates not included, and there are a few houses of a larger class at higher rentals. The village is served by Birmingham with gas, water, and sewers, the rates being about 6s. 6d. in the pound, exclusive of water rate.

Although much has been said of higher percentages, 4 per cent. on the outlay is the most that should be expected in building houses of this class, the same meeting the demands both of satisfactory accommodation and artistic appearance. The profit on the outlay is often exaggerated, and it might be well to point out that 6 per cent. gross will rarely pay 4 per cent. net, as is often stated. It is true that a greater profit may be made by erecting houses in endless rows to an unsightly stock pattern; but I strongly urge that the only legitimate way of diminishing cost is by the avoidance of unnecessary ornament and by the advancing of a pleasing simplicity. The jerry-builder introduces considerable ornament in detail, which, though neither necessary nor beautiful, must yet cost him something, and it is in attention to such matters as this that the difficulty may be largely overcome.

In building a street of houses the expense would, of course, be very great if, to get variety, we employed a different plan and different details for each house. We have to recourse to other methods. In the case of fifty houses I might suggest getting as many details, such as windows, doors, and door-frames, the same (or, at any rate, half of one kind and half of another), and should avoid the monotony by a variation of the disposition of these features. An extensive elevation may also be made interesting by the treatment of a porch here, the addition of a bay window there, and the use of rough-cast somewhere else. Go in for the most irregular building line you possibly can. In a block of three cottages a pleasing effect is gained by projecting or recessing the middle one, or putting long way on, and so forming a fore-court in front.

If it be resolved that a row of houses shall have ornament to make it attractive, I would suggest that something not too small and crowded be distributed here and there—say, on the first and third houses—the unadorned ones affording relief to the others. I might mention that if an architectural village had been the main object at Bournville, more money had been spent on detailed enrichment. After all, let money be sown lavishly, and in this spring-tide revival of architectural art Utopia itself may spring up!

The idea of a cottage home that I have always endeavoured to keep in view is one in which beauty is based on utility—a principle which should guide all art, it is true, but which, in order that a plebeian and vulgar taste for shoddy display may be gratified, has been too often violated—and though with the artisan class it is perhaps most difficult to gain this end, an adherence to it must sooner or later tell. On the whole, my experience at Bournville has been that the residents in the cottages have shown a remarkable readiness to catch the idea and spirit of a homely simplicity, and it is evinced in such details, for instance, as their manner of furnishing the rooms, in their adopting suitable and artistic

curtains to the casement windows, etc. Another point I have endeavoured to keep in view is the advisability of building more permanent dwellings than those we so commonly see erected in these rows. Many of these are the work of a speculative builder, who sells as soon as the slates are on to one who will probably sell again, someone in the end suffering considerable loss. To say that care should be taken to well ventilate floors is almost a platitude; nevertheless this is sometimes overlooked in the effort to save a trifling expense, in spite of the fact that in the long run, when dry-rot sets in, a considerable expense is inevitable. There should be a bed of concrete over the whole site, and plenty of air bricks should be employed to thoroughly ventilate ground-floor joists, and the same (or whatever ground work is used under joists) should be, if possible, above the level of the ground round the house. This prevents any chance of water collecting under floors. There is an increasing demand for a substantial home, and in time—let us hope soon—it will be such that must be supplied.

My object being to deal with cottages the cost of which is from 175*l.* to 750*l.*, I take first the accommodation of one of the smallest types, erected in blocks of four:—

Ground Floor:—
Living-room, 13 ft. 6 in. by 12 ft. 6 in.
Scullery, with cabinet bath, 10 ft. 6 in. by 7 ft.
Larder under stairs.
Coals and water-closet.
Small paved yard.
Lobby.
Size of garden, 600 square yards.

First Floor:—
Front bedroom, 13 ft. 6 in. by 12 ft. 6 in.
Back bedroom, 16 ft. 6 in. by 7 ft.
Small linen closet.

Total cost, including laying out of garden and all extras, 175*l.* per house.

Estimated net return, 7*l.* per house. A return is, therefore, obtained of 4 per cent.

Cubical contents, 8,023 ft. per house, at 5¼d. per foot (in 1903) = 175*l.*

At Bournville 8 per cent. gross yields about 4 per cent. net.

This type is of the smallest possible dimensions and simplest construction; the roof runs uninterruptedly from end to end, and the building throughout is of a very inexpensive character. In this class of design every simplicity should be studied; unnecessary roof complications should be avoided, and the chimneys, in order to diminish trimming, flashing, etc., grouped together and brought to the highest point of the roof to avoid down-draughts and cold, smoky flues. It is not essential that each bedroom should have a fireplace if efficient ventilation is provided. Nooks and recesses doubtless make a room interesting, but in small cottages of this kind they are too expensive to introduce, and, instead, the best must be made of materials, colour, and proportions, if we are to make 4 per cent. on outlay.

A very important point to emphasise regarding cottages of all sizes is *compactness of plan*, and there should be an aim at getting wall lines as long and as unbroken as possible. Where possible all outbuildings should be arranged under the main roof, otherwise when cottages are semi-detached one of them must suffer through the projecting roof of the other. This precaution also admits of a better view of the garden from the living rooms, and the glimpse of green is no small consideration in the building of cottage homes. Care should be exercised in the planning of corner cottages to avoid the yard being exposed to the road, and where necessary it should be enclosed. The flaunting pageantry of the week's wash may be meet perhaps for the eyes of the matron of the tub, but for the public it is generally considered an eyesore.

Aspect and prospect in small and large houses alike should have careful attention, and it should be remembered that the position of the larder, which, when possible, should be north or north-east, is of no small domestic importance.

Another type is as follows:—

Ground Floor:—
Living-room, 17 ft. by 16 ft., with ingle-nook and bay.
Scullery, 13 ft. by 10 ft. 6 in., having bath sunk in floor.
Larder, 5 ft. by 6 ft.
Coals, water-closet, and small paved yard.
Verandah in front.

First Floor:—
Bedrooms, 17 ft. by 13 ft. 6 in., 8 ft. 6 in. by 9 ft. 6 in., and 13 ft. by 8 ft. 6 in.
Small box cupboard.
Attic, 16 ft. by 17 ft.

Total cost, about 300*l.*

In view of the advantage of one spacious and healthy living-room over the parlour plan, this class of cottage has been largely introduced at Bournville. The dweller in this home must get far better value for his rent than that artisan of the suburb of mushroom growth in his cramped villa. Is it not piteous to think that the front parlour, silent and musty during the week, should know the amiable chatter and cheerful blaze of the fire but for six hours on the Sunday? A pleasing writer (Mr. G. K. Chesterton), writing not long since upon a debate in the London County Council upon the Housing Committee's report, urged that this drawing-room, with its wax fruit and other gimcracks, represents the art instincts—or, as he called it, the religion—of the artisan, and he became eloquent in denouncing its abolishment. Surely he was in jest. For could not a corner in his more spacious room be yet preserved for such treasures, and the tinkle of the hymn tune be heard to greater advantage withal?

I consider that the heights of 8 ft. 6 in. for ground floor and 8 ft. for bedrooms are quite adequate for the average cottage, so long as sufficient ventilation is provided. Floor space is the most important consideration in the economic building of cottage homes.

I might say here that the cottage with the long sloping roof, of which I have many examples at Bournville, has one great advantage, for if the front walls were carried up level with the ceiling line of bedroom, besides the building suffering in lack of proportion the expense of extra brick-work is considerable. Generally speaking, the height of bedrooms to the point of intersection of the roof and wall need be no more than 5 ft. 6 in. Ample ventilation may be got by the simple insertion of a 9 in. by 7 in. air brick on the outside wall, and a tobin tube within, about 5 ft. 6 in. from floor, the cost of the latter being only about three shillings.

The bath, now justly regarded as an essential in every house, is, where the cottage is not of a size to admit of a bathroom, either sunk into the floor of the kitchen near the hearth, which is covered by what may be used as a standing or draining board, or, if sufficient room, not sunk, but covered by what may be used as a settle or table. In some cases the patent adjustable bath has been used, the same being hinged at the bottom of one end in order that it may be raised and lowered from a cabinet, the upper portion having shelves and forming a cupboard, where it is kept in a vertical position, much room being saved thereby, the cost being about 3*l.* 5s. In other cases the admirable arrangement of Corne's Combined Scullery-Bath-Range and Boiler has been introduced, which I can well recommend. The patent, one well thought out, utilises to its fullest extent the heat of the kitchen, and, while a great economy of space is effected, there is considerable saving of fuel to the householder. The heating and cooking range forms a great part of the division between the kitchen and scullery-bathroom, the flue being coursed over the head of the bath. In the centre of the range is the grate, with an oven on one side and a twelve-gallon boiler, in which water is kept hot for domestic purposes, on the other. Boiling water can be obtained by raking down live fuel into a small secondary grate under the boiler through a small hole made for the purpose. Clothes can be boiled in the boiler, with which, owing to its open construction, there is no risk of explosion. Access to the boiler from the scullery is gained by opening a curved door, and further developments have been made in the way of providing a folding door in front of the range, which will shut off the boiler from the kitchen when necessary. The scullery-bathroom, which contains about 36 superficial feet, is fitted with a full-sized iron enamelled bath, supplied with hot water by a pipe from the range boiler and with cold water from the cistern, or through a shower-bath sprinkler fixed overhead, so that this latter luxury can be enjoyed by simply turning the tap.

I have found the introduction of White's Patent Steam Exhaust advantageous and efficient in preventing steam permeating other rooms.

The following is an example of a cottage where a clear 4 per cent. is made on the outlay. A large number have been built to this plan at Bournville. The accommodation is:—

Ground Floor:—
Parlour, 13 ft. 6 in. by 11 ft. 3 in., and bay.
Living-room, 14 ft. 6 in. by 11 ft. 9 in. (French window).
Kitchen, 12 ft. 3 in. by 10 ft. 6 in.
Larder, 6 ft. by 6 ft. 3 in.
Porch and hall, and cloak space under stairs.
Tools, water-closet, and coals, enclosed yard, and 600 square yards garden.

First Floor:—
First bedroom, 13 ft. 6 in. by 11 ft. 3 in.
Second bedroom, 14 ft. 6 in. by 11 ft. 3 in.
Third bedroom, 10 ft. 6 in. by 8 ft. 3 in.
Bathroom (hot and cold water).

Total cost, including laying-out of garden and all extras, 395*l.* per house.

Estimated net return, 16*l.* per house.

A return therefore is gained of 4 per cent.

Cubical contents, 26,885 ft. cubic, at 5¾d. = 404*l.*

The hearth, which should be the holy of holies in the home, is worthy of the architect's most careful attention, even in the smallest cottage. It should in itself convey the suggestion of comfort, and it might be remembered that the most inviting hearth is not that which is surrounded by artistic extravagance. Fireplaces I consider suitable for the six-roomed cottage are as follows: For front room, interior, slabbed surrounds, tiled hearth, and white wood chimney-piece; dining-room, iron tiled mantel-sham; kitchen, 3 ft. range, with white tiled coves and York stone shelf and trusses; front bedroom, 30-in. mantel-sham and tiled hearth; back bedrooms, 24-in. mantel-sham and tiled hearth; the total cost of the whole amounting to 12*l.*

I should like to say a word in favour of the casement window. It is not only cheaper than the sash window, but if in the building of a small cottage beauty of effect is *demanded* it is expressly cheap. Whatever the æsthetic principle be, there is something (perhaps it is its simplicity) so homelike in its appearance, which makes it infinitely more fitting than the sash species. Behold Juliet bending to Romeo from a sash window! The old difficulty of cleaning may now be obviated by the very simple device of causing the window to open upon a pivot in the centre, inwardly as well as outwardly, which permits the whole of the outside of the fixed pane to be reached easily by the hand.

A good window-sill is formed of calf-nosed bricks set on edge in cement, with two courses of tiles beneath, which forms a drip under sill, and a backing of slate, also in cement. By bringing the window-frame forward to reduce the size of top of sill damp and the driving in of rain at this point, the curses of small property, are prevented. This makes an inexpensive sill, and, adding as it does to the appearance, is very suitable for cottages.

The following is the accommodation of a single cottage:—

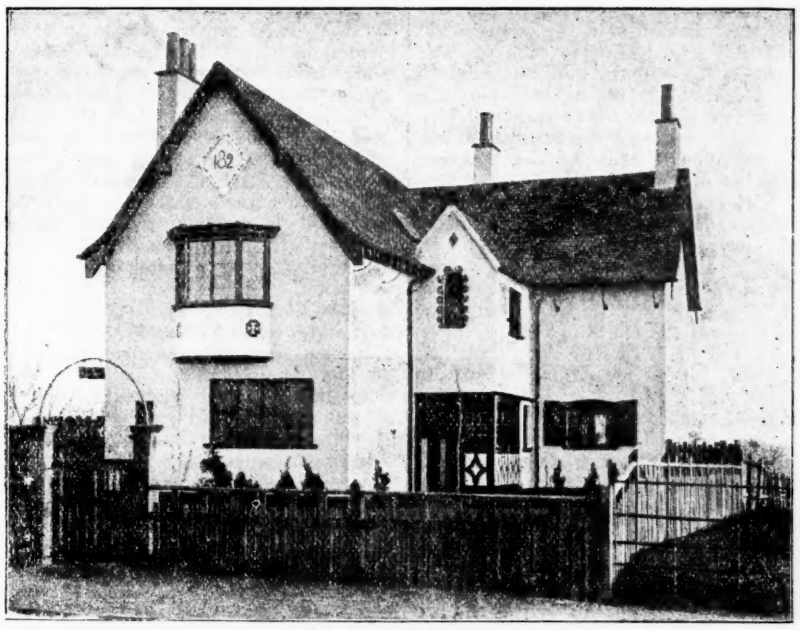
Ground Floor:—
Drawing-room, 13 ft. 6 in. by 12 ft. 9 in., and bay.
Dining-room, 13 ft. by 13 ft., and bay.
Kitchen, 10 ft. 9 in. by 10 ft.
Scullery, 7 ft. 6 in. by 10 ft.
Larder.
Porch and hall, cloak space under stairs.
Coals and water-closet.

First Floor:—
First bedroom, 13 ft. 6 in. by 17 ft.
Second bedroom, 13 ft. by 11 ft.
Third bedroom, 12 ft. 3 in. by 10 ft.
Dressing-room, 7 ft. 6 in. by 7 ft. 6 in.
Cupboards.
Bathroom, with water-closet, and lavatory (hot and cold water).

Total cost (1899), about 600*l.*

The accommodation now given is of a larger class of cottage:—

Ground Floor:—
Drawing-room, 11 ft. 9 in. by 13 ft. 6 in., with 4 ft. 9 in. by 10 ft. ingle and bay window.



House at Northfield.

Dining-room, 16 ft. by 13 ft. 6 in., and bay.
Kitchen, 12 ft. by 10 ft.
Scullery, 9 ft. 6 in. by 9 ft. 6 in.
Larder.
Water-closet and coals, and tool-house.
Porch, hall, and small cloak space.
Frontage, 15 yards.

First Floor :—

First bedroom, 16 ft. 6 in. by 12 ft.
Second bedroom, 12 ft. 6 in. by 13 ft. 6 in.
Third bedroom, 13 ft. 6 in. by 9 ft.
Fourth bedroom, 10 ft. by 10 ft. 6 in.
Box-room, 9 ft. 6 in. by 8 ft. 3 in.
Bathroom.

Total cost (1899), about 650*l*.

My object in giving these different accommodations is to show what can be given in the way of substantial dwellings for the amounts given.

In this case the outlook at the back of the house is to be preferred to the front, and, as should always be done providing the aspect is favourable, the principal rooms are placed at the back.

As to wall decoration in interiors, for small cottages I have found it advisable to use papers instead of colour wash, for the latter is very soon soiled where there are children. In the better houses a colour-wash may be at first used and a paper added later, with a frieze. A good effect is also obtained by bringing down the white from the ceiling as far as the picture rail, which gives light to and improves the proportions of the room. Picture rails should be placed in the smallest houses, if only to save the plaster. I generally place them level with top of architrave of door.

With regard to bricks, as far as possible I make a point of avoiding those which are mechanically made (the pressed stock brick) and use the brindled Staffordshire ones. They are more suitable for cottage building, for a pleasing variety of colour is introduced at a low cost, the tint sbeing a bright cherry red blended with purple and blue—the last of which is quite different from the indescribable vitreous blue. I prefer to use the hand-made roofing tiles and thick Welsh green Precelly slates, and occasionally the rustic peggies.

Roof-ridging, though seemingly a small matter, should have careful attention, and in my opinion it is wiser to suppress the same rather than to sharpen it, for by so doing a much-desired homely appearance is lent to the cottage. Many fantastic ridges, with vulgar finials, are employed in the building of small suburban villas, of a more or less sharp pointed character and of a depth out of proportion with the roof, which gives an unpleasant harshness to the general appearance. With the principle in view that the sky-line should be softened as much as possible, I invariably use the brindled hand-made half-rounds. With green slates I use blue ridges, as being the most suitable colour, and one which defines without undue severity.

There is a strong temptation to introduce a variety of colours upon exteriors, but with cottages of the class I deal with it is advisable to refrain from so doing. My experience has been that it is best to get the colour in masses, treated broadly, not in bits—say, each house of one colour ; for where the cottages stand close together, or even where they are semi-detached, the contrast or relief is borrowed from the neighbouring one, and in the case of a village a much better general effect is thus gained. With whitewashed houses a tarred plinth of about 2 ft. is pleasing, and prevents the rain and mud splashes from being seen.

With regard to the thickness of walls, my opinion is that a 9 in. wall outside is sufficient, and is to be preferred to the cavity wall. South-west fronts should be protected by overhanging eaves, but where this is impossible the face should be whitewashed, by which not only is damp largely prevented, but an effective appearance gained.

As to general timber, I might say that I have used common building red deal, the joinery being of seconds and thirds Archangel, and, where larger timber is required, the ordinary pitch-pine. Oak is advisable for weather-boarding and sills.

Half-timber for exteriors I do not recommend. District Councils insist on a 9-in. wall being at the back ; thus not only is its use false art, but an unwarranted present and future expense ; an effect equally as good, moreover, is obtained with rough-cast or whitewash. Half-timber one lives to regret, for the weather tells sadly, and it demands constant repair.

A garden arrangement largely adopted is as follows: At the bottom are eight apple and pear trees and fruit trees, which, besides being reasonably expected to bear fruit, form a screen between houses which are back to back. The paths are made of 6 in. of ashes and 3 in. of gravel. The position of the grass plot and ornamental bed at the top permit a little soothing green and flash of colour to be seen from within the house.

Tool sheds should be erected beyond the outhouses, not only because of their usefulness, but as a means of preserving the appearance of the back. The tenant, if these are not supplied, invariably knocks up a disorderly apology from Sunlight Soap cases, and it is best to forestal him.

Given a plot of land upon which four houses are to be erected, it is advisable, in order to more equally distribute the garden space, say, of about 500 or 600 square yards per house, to spread them laterally by arranging the staircase, not between the rooms, but between the houses, thus widening (not lengthening) the building. This, bringing the remote houses nearer the extremity of the land, not only gives the garden plot the preferable straightness, but a breadth of view upon same is obtained from within and the yard space materially widened.

[The paper was illustrated by lantern slides of a number of plans and views, and there was considerable matter relating only to them which does not appear here.]

Mr. E. Guy Dawber, in proposing a vote of thanks to the lecturer, said they had listened to an excellent paper, which had been especially interesting because it gave them the practical experiences of an architect in building these different types of country homes. They had seen in the series of lantern slides houses from the quite small cottage to the more comfortable middle-sized house. They must congratulate Mr. Harvey upon his very beautiful work and upon the exceptionally fortunate position in which he had been placed in having—as they could only think was the case after seeing the lantern views—a more or less free hand in dealing with the various problems. It was most interesting to see what could be done with this class of building at the present day, when left in the hands of a capable architect, and it was quite certain that Mr. Harvey had not been hampered by a lot of restrictions or by a fussy client. The plans of the buildings shown were particularly interesting, and he would have liked to have examined them more attentively than was possible when they had to be passed quickly on the screen. All who had seen those plans must have been struck by the tact with which the houses had been arranged, especially in the case of the very small ones. In country districts, as a rule, there were not many of the larger houses; the three to six bedroom houses ; much smaller buildings were the rule, and it was as to those buildings that the much-debated question of the third room, or parlour, arose. In the old cottages they did not have the third room ; there was just the one large comfortable room, with the ingle fireplace, and a room at the back where all the culinary work was done, and nothing was more comfortable than that ; but at the present day, with people always aiming to

Four Cottages, Acacia-road, Bournville.

get into the position just above them, no labourer's cottage was considered to be fit without this useless third room. They all must have had experience of the difficulty of getting people in the country to put up with two living-rooms. He knew from personal experience that people, like gardeners and coachmen, thought it undignified and derogatory to their position not to have this third room. He would like to know from Mr. Harvey what class of people, and what their wages were, who lived in these two-roomed cottages. They must all have noticed and must have envied Mr. Harvey that he had worked in a country where there was a background of fine trees. Trees helped modern buildings very considerably. If they put houses like these on an absolutely bare plain they lost a great deal of the charm which always arose from having beautiful trees in conjunction. He quite agreed with what had been said about windows—a sash-window in a cottage was out of place; the height of the room precluded it, and a casement alone was suitable. What Mr. Harvey said about 9 in. brick walls seemed to be open to comment. Mr. Harvey said he had always found 9 in. walls sufficient; he could have had no experience of building on the Surrey hills or in the south of England during the last winter! Building as they did, even with 14 in. walls, the rain came through, and what they would do with 9 in. brick walls, unless rough cast, he did not know. He was glad to see that Mr. Harvey had used stock bricks just as they came out of the kiln, of all colours. They always got a texture if they used bricks like that; and if they could not use a material of good colour, there was nothing like whitewash, which always had a comfortable effect, especially when it got toned down. One thing had struck him while he was in France last autumn. In painting houses there, new as well as old, they generally used one tone throughout, matching the colour of the roof, and that gave a very pleasing effect. If we did that more in this country we should get a much quieter effect, especially where, as in cottages, the features were brought together and contracted. The arrangement of placing two projecting cottages as wings by the side of a receding one, as shown by Mr. Harvey, was very agreeable.

Mr. Sydney Vacher, in seconding the vote of thanks, said that Mr. Harvey, in giving them his experience, and in showing them all his plans, sections, and details, etc., showed a generosity which the Association ought to feel indebted for. There was only one point he wanted to refer to, *i.e.*, a difficulty as to the cheap cottage—the cottage letting at 5s. to 6s. per week. The cottages might consist on the ground floor of parlour and scullery-kitchen, stores and staircase, and three bedrooms on the upper floor. Now, the biggest bedrooms cannot be more than 13 ft. 6 in. by 12 ft. 6 in. His example came out 13 ft. 6 in. by 8 ft. 6 in., and in each case there was a cupboard space, say, 3 ft. by 4 ft., over the entrance at foot of staircase. He saw, on referring to his plan, that he got three bedrooms as against Mr. Harvey's two; but it did not matter, for invariably it would be found that one, if not both, of these bedrooms would be let to lodgers—certainly not given up to young children. Now, by increasing the entrance, say, 3 ft. by 7 ft., outside dimensions, and placing the door to room on the slant, this, when carried up, would make a bay that could be screened off by a curtain from the parents' room, and in which two children could sleep; and, having a window in it, more ventilation could be obtained. This feature made a very useful entrance, besides coming very well for the elevation, and was a way out of a serious difficulty at a but very small extra expense. That these people would keep one of the ground floor rooms as a parlour used but seldom was a fact all architects having to do with cottage work must face; this and their weakness for taking in lodgers were the two chief complaints of the philanthropic cottage builder. He had tried in this cheap property putting a good cooking-range only in the front room (with a good dresser next it), and only a copper in the scullery; but a further cooking-range had to be put later on in the scullery before the cottages could be let to satisfactory tenants.

Mr. H. D. Searles-Wood, in supporting the vote of thanks, said the parlour in these cottages was a white elephant, but one of the difficulties in the way of its abolition was the matter of rent. In his neighbourhood tenants of cottages letting at 8s. 6d. to 10s. 6d. per week were almost bound to take in a lodger to help to pay the rent, and, if they thought of it, the young clerk or shop assistant who lodged in such a place did not want to share in the domestic bliss of the family in whose house he was lodging, and so this parlour was the only room available. While he cordially endorsed the plan of having no superfluous room in these houses, yet this lodger difficulty did away with some of the objections to the parlour. He had a client who refused to have three bedrooms in these houses so as to discourage lodgers, but that gave rise to difficulties where there were children of two sexes, when three bedrooms became necessary. He would be glad if Mr. Harvey would say how he constructed the curve of the roof over the windows, shown in one of the slides. It was always difficult to keep out the wet in such cases.

Mr. Arthur Keen asked whether there was a gutter in the case of the curve of the roof just referred to; and, if there was not a gutter, what became of the water. In most of the cottages, he noticed, the party wall was not carried up through the roof. He supposed the by-laws in the neighbourhood allowed the party wall to be omitted, but in London, as they knew, the party wall had to be carried up, and that added materially to the cost of building. The party wall not being carried through the roof, he would like to know whether it stopped at the ceiling or under the tiles. As to the rents, did they include rates and taxes? They seemed to be low rents in some cases, and if the sums paid included rates and taxes, then they were very low. And was the cost of land covered in reckoning the interest? It seemed difficult to believe that houses, with so much ground, and built so well, and with such good fencing, could pay anything like 4 per cent., and he should like to know if there was a genuine return of 4 per cent.

Mr. Francis Hooper said they welcomed Mr. Harvey amongst them cordially as a provincial brother. He had had the great pleasure of looking round the Bourneville estate last autumn. Although the scheme was a considerable one, if each of their 1,600 members succeeded in securing a client like Mr. Cadbury, and built as many cottages as Mr. Harvey, the problem of housing the people would still not be solved, for it was very vast. Last year they welcomed Mr. Lever, who gave them an account of his generous work at Port Sunlight, from which little attempt was made to get financial return; Mr. Lever practically gave the property to his workpeople, and rents were not fixed on an economical basis. Mr. Cadbury's scheme was a more practical one, and more easy to follow. The scheme was on a sound financial basis, added to which, no doubt, Mr. Cadbury was rewarded to an extent by the satisfaction he must feel in doing good work for his fellow men, and it was to be hoped that he was able to secure the best workmen in the district. From that point of view the scheme might commend itself to other employers of labour, though whether financiers would be prepared to take part, for a return of 4 per cent., in a scheme involving so much work and anxiety was a question. As to party walls, evidently the by-laws in the district were different from what they were in other districts. One pleasant feature was the employment on the estate of almost invisible iron fences which afforded open views so commonly lacking. As to the parlour question, he had the temerity the other day to tell the students of the Elementary Class of Design that the ordinary working-man was so conservative that it was not politic to omit the parlour. Evidently, Mr. Dawber had had to do with some of the same sort of people that he (the speaker) had—those people insisted on having a parlour. If the room were used by parents as one for quiet, forbidden to the children, he could understand it; that would be an excuse for the parlour, for a tired worker needed some such place after his day's work. He congratulated Mr. Harvey on his work and on the simplicity and beauty which characterised it.

Mr. T. C. Yates asked what provision was made on the estate for recreation—for lectures, concerts, etc., and for baths and such like.

Mr. W. Henry White said he would like to emphasise what Mr. Hooper had said as to their pleasure in welcoming a country visitor amongst them. If they wanted to spread the influence of the Association to the provinces it could be done, he thought, by getting country members to come and read papers before them, as had been done that evening, and if they did that they would reap the advantage of learning some of the methods of provincial men. In that way it might be possible to influence more country men to join the Association. Nowhere near London would it be possible to produce anything like this Bournville scheme on a paying basis; the cost of labour and land would utterly preclude it. He knew where some property was being developed in London, and where large sums of money were being expended to provide homes ostensibly for the working classes, and there was not the slightest hope of getting a return of more than 1½ to 2 per cent. That was the difficulty in getting owners to study the question of housing the poor, and he believed that our housing committees could not build on anything like a paying basis; in the early days of the Peabody-buildings and the Industrial Dwellings Company it was possible to do so. In seeing the charming views of these Bournville houses he could not help thinking of our East-end squalor; if some philanthropist would come along and help them, and if something could be done to provide these artistic and healthy cottages for the East-end workmen, it would be a great blessing. But as it is, the everlasting cost of materials and labour was the difficulty, while the working man did not assist in its solution.

Mr. Maurice B. Adams said he should be glad if Mr. Harvey could clear up one little point. As far as he could gather, the estate primarily was intended to furnish residences for Mr. Cadbury's workpeople, but it seemed that other houses were now built for which the same rents were paid as were charged to the employées. At Port Sunlight Mr. Lever's necessity was largely the basis of what he had done, and, as he (the speaker) understood, the returns were regarded in the way of rent in connexion with the amount of wages paid. Mr. Lever, with the requirements before him of providing accommodation for his workpeople, put rent and wages together, although no doubt he had acted large-heartedly as a philanthropist. This question of cottage building was inseparable from monetary considerations, to architects as well as others. It was a difficult problem to build a house to provide a maximum amount of accommodation in a commodious and artistic way for a strictly limited amount of money, and consequently he thought there was some practical use in asking Mr. Harvey the question he had. If houses for other than the workpeople were being erected on the estate at an even rental, were not those workpeople placed somewhat at a disadvantage? Ought they not to have some preference over the mere outsider who came to live in the village, or how was that managed? In some of the flat-covered dormers and in the shaped roofs seen in the views was it possible to afford lead? Or was zinc used? The use of lead added materially to the cost, but in many ways zinc was objectionable and in no way preferable. As to the carrying walls over, as they saw in some designs, that necessitated the use of iron joists or something of that kind, and there again there was an addition to the cost; indeed, they could not get away from the cube or the plain surface wall without adding to the expense; spaces lost between roofs meant expense, although they helped to produce a good effect in the appearance externally. It would have been an advantage to have seen a plan of the estate in order to see how the "triangle" came about and to have learnt something as to the contour of the land. Some of the views suggested a considerable fall in the ground, particularly from the rear of the houses which would seem to help in the matter of drainage; but in some districts it would be difficult to make provisions for the sunk bath, which no doubt was a useful feature. At Port Sunlight he was amused as to the uses some few of the people had put their baths to. In one case the bath-room had been used as a hen-house, showing what some tenants will do.

The Chairman, in putting the vote of thanks, said he endorsed what had been said in welcoming Mr. Harvey amongst them. From his own experience, he could say he had always received a most hearty welcome from Birmingham architects whenever he went there to read a paper. Mr. Dawber raised an interesting point—*i.e.*, as to the way in which an added colour effect could be obtained by very simple means. Mr. Harvey had shown them how he used whitewash on the walls with a tar plinth,

but if greater harmony could be obtained by colouring the woodwork of doors and windows in the way suggested it seemed a desirable matter to consider and follow, as far as possible; it was a matter which was largely ignored, we were so accustomed to the bright grass-green on the one hand and the plain white on the other. Mr. Dawber's idea was a refreshing one, and would be welcome. As to the by-laws, Mr. Harvey had been most fortunate in that, to all intents and purposes, he had not been hampered by by-laws. They had heard about party walls, and they knew it was a great saving of expense to be able to keep them down as Mr. Harvey had done. In most districts near London they could not build houses close to one another with the delightful little verges shown in many of the buildings they had seen views of. The by laws required parapet walls and the picturesqueness of the verge gable-end was gone. Window frames must be set back, and wal's must not overhang. These were some of the ways in which architects were hampered by by-laws, and it was the same as to drainage. He would rather like to know from Mr. Harvey whether 5¼d. was an average price per foot cube. How many of them could build at that rate? He presumed that the houses drained into the sewer. He found that a most economical arrangement of self-contained drainage—and they had to be economical in building these cottages, and drainage was a costly item—was to have an earth closet detached; it might be attached, but it was pleasanter on the whole to have it detached, and then to deal with the other drainage—the scullery sink drainage, which was the most objectionable of all—by having a pail on the outside of the scullery wall with a pipe leading into it from the scullery sink. When the pail was full it could be emptied on to the garden, which was altogether the best arrangement. But many by-laws would not permit this simple expedient, and again and again he was not allowed to have his pail system, an expensive system of sewage disposal, manholes, etc., being insisted on. As to the thickness of walls, he thought that Mr. Harvey was a most fortunate man in being able to build 9 in. brick walls and give his client satisfaction. Were there many of them who could do so round about London? They might be able to do it in stock bricks, but with ordinary red bricks the walls would be as damp inside as outside. While people did not want the 14 in. wall, the 11 in. wall, with space between, gave a safe and a dry wall, and was only a little more expensive. Mr. Harvey seemed to think that hollow walls were objectionable, but he did not say why. Other than the mouse difficulty, which was a trifling one, what objections were there? The hollow wall was a dry wall, and it was surely better to have a wall which was dry under all conditions. As to the parlour question, they must provide one in an ordinary cottage, although it was a useless room. Quite recently, in some cottages he was building, he had been required by his client, after consultation with his gardeners and coachmen, to provide a double-fronted villa—a 350*l.* cottage! The gardener or the coachman required to have the kitchen on one side of the front door and the parlour on the other, with stairs going up from the lobby or hall; the stairs must not open out of the kitchen or bedrooms out of rooms. It was requirements of this kind that hampered one in building so cheaply as one otherwise might, but the difficulties had to be met, for gardeners and others of this class would not take houses that did not possess these luxuries. Architects were sometimes blamed for exceeding cost, and in this class of work it was generally due to these unreasonable requirements.

The vote of thanks having been heartily agreed to,

Mr. Harvey, in reply, said, as to the people who lived in the large living-rooms on the estate, they did not have much difficulty in getting people to live in them. They were really a better class of artisan, and they were pleased to take these houses, and were generally very satisfied with them. As to whether there was a spout to the curved roof of the houses shown, there was a lead spout which carried the water to the main roof. The party walls were carried up to the roof-line; the by-laws did not require them to be carried beyond. The rents quoted included rates. To capitalise the land, it would be about 60*l.* per house, or 1d. per yard leasehold, or 2*l.* 10s. per year. All houses did not pay 4 per cent.; some did not pay more than 2¾ to 3 per cent., but the plainer ones paid 4 per cent. It was the intention of the trustees that all property erected now must pay 4 per cent., which would mean building much more simply and in a cheaper way, which was a difficult matter. Still, as he had shown, some of the houses gave a return of 4 per cent., and to pay 4 per cent. they expected 8 per cent. gross. A park was just about to be opened for the use of the people on the estate, and they were providing a school. He had the plans out now, and he expected that when the whole thing was complete it would amount to about 25,000*l.* It would be fitted up with cookery centre, school laundry, manual instruction, library for use of upper standards, and large playgrounds. It was intended to teach botany and gardening at the school, and the buildings would stand in a garden. The dormers referred to by Mr. Adams were covered with lead. The roads were drained for sewers, and a separate connexion was made for each pair of houses. Of course he had been very fortunate in having a client like Mr. Cadbury, and there were few men ready, as Mr. Cadbury was, to give one a free hand.

The Chairman announced that the next meeting would be held on the 19th inst., when Mr. W. Henry White will read a paper on "Corner Houses," illustrated by lantern views.

The meeting then terminated.

MAGAZINES AND REVIEWS.

The *Art Journal* devotes a very large space to comments on and illustrations of the International Society's Exhibition, illustrating from its walls things beautiful and things ugly and vulgar with impartiality, and bestowing praise all round. It is amusing to read articles of this kind, and to know how this exhibition and many of the things in it are really regarded by many artists of high position. Anything like independent and thoughtful criticism of works of art seems to be almost at an end for the present; the so-called critics run in one path like a flock of sheep; what is in the International is good, what is in the Academy and other exhibitions of long standing, and which keep some principles of art before their eyes, is poor, dull, *passé*. M. Le Sidaner is taken up in another article as a great artist; he is becoming a fashion, and we are told that every work of his is caught up now by dealers and collectors. And what has M. Le Sidaner really done? He has found a new trick in painting outdoor scenes, that of representing everything as if seen through a fog. It is novel; it is clever and striking in a way, but it is in reality merely an eccentricity in technique; and a new eccentricity seems to be the salvation of an artist nowadays. The late Herr Bœcklin, to whose works an article is devoted, was a really fine landscape artist: "The Villa by the Sea" and "The City of the Dead," of which illustrations are given, are really fine and poetic pictures.

The *Magazine of Art* is considerably occupied with architecture. There is Mr. Raffles Davison's article—a continuation—on "The Progress in Recent Architecture," illustrated in this number by sketches of modern town houses, interiors and exteriors. All the illustrations justify the title of the article, and are examples of picturesque and original treatment. This is the last article on the subject, and at the end of it Mr. Davison strongly urges on the reader's attention the fact that, "whatever its cost is to be, the home may always be artistic if the client *really desires* it." He is quite right, and that spirit of desiring art is what we really want. As Lord Leighton said long ago—"What the public wants, that it will have." As a rule the English public does not want art, and that is the great difficulty. Mr. Aymer Vallance continues his series on "Good Furnishing and Decoration of the House," dealing in this number with the bedroom. Speaking of historical changes which have come about, he contrasts the present privacy of the bedroom with the fact that in the days when the dwelling house practically consisted of but one principal room, "the bed or beds of the master and family formed as much a recognised part of the furniture of the hall as did the dining table itself." The writer seems to be speaking of early mediæval dwellings; but he might have gone back to classic times, when the *lectus genialis* was prominently placed so as to give assurance to every visitor of the probable continuation of the family. As to the illustrations, there is too much of the spirit of imitation in them. Why suggest "a Louis XV. bedroom" and "a Sheraton bedroom"? And why, above all, suggest the revival, as part of the show, of that stuffy, unhealthy erection, the four-post bed with a roof over it? The Georgian bedroom is better, for the style of furniture and decoration suggested in it is simple and sensible, apart from any question of historical imitation. We regret to see these imitation styles in an artistic journal, because they tend to encourage the idea (far too prevalent as it is) that there is something essentially artistic in imitating the detail of a former age; and, in the case of the Louis XV. room, an age of tawdry taste. There is a suspicion of the commercial element here, too, the names of the firms who are ready to provide these historical bedrooms being given. Of the modern ones that by C. H. Walker is very pleasing, that by Messrs. Liberty still more so; both of these are quiet and reposeful. The "Bedroom for a Country House," by Messrs. Warings, is also admirable, all but the antiquated four-poster. The reintroduction of this quadruped is a distinct step backward in sanitary furnishing. Mr. Spielmann, in his essay on "Art Forgeries," treats in this number of "Scarabs, Tanagra Figures, Engraved Gems, and Miniatures," giving cruelly an illustration of "a counterfeit scarab in the Birmingham City Museum," and some examples of admirable imitation Tanagra figures. These are honest imitations, offered as such; they show, however, that the thing can be done so as to be deceptive. Mr. Val Prinsep contributes a most interesting and amusing chapter of reminiscences of Rossetti, Burne-Jones, and William Morris, including anecdotes about the execution of those fearful and wonderful paintings executed at the Oxford Union, and how Morris was called to order by Rossetti, and told he must "do that head over again," as it was "not human—you must get some nature." The rest of the story is still better, but it would be unfair to extract it.

The *Burlington Magazine* opens with an article on "The Future of the International Society," which does not promise very much for the soundness or independence of the critical views on modern art which are in future to form part of the programme of the magazine. It is the fashion at the present moment to praise and exalt whatever is *outré* in art, and to proclaim this so-called International Society (whose internationality is very limited) as a kind of wholesome antidote to the Academy. We have read all this over and over again in the current art-criticism of the day, and regret not to find an independent voice. The present exhibition of the International Society, at all events, is not of such a nature as to justify all these anticipations of its future; but as long as the taste for what is eccentric and ugly in art prevails, exhibitions which are content to welcome the ugly and eccentric will be the favourites with the critics. Perhaps it will someday dawn upon them that an Academy which, if it is rather dull and old-fashioned in its sympathies, refuses to find room for unfinished sketches, headless figures, and perverse eccentricities falsely dubbed with the credit of "originality," is after all doing something to uphold a sane standard in art. And when we read that the International Society "does not possess the old associations which assure the Royal Academy and the Water-colour Society, however imperfect their exhibitions, a goodly number of shillings at the turnstile," we can only say that such a sneer at the Water-colour Society, the exhibition in London where there is a higher average of really beautiful works than in any other, is at once ignorant and impertinent. But this kind of writing is in the fashion now, and of those who write one may say, like Prince Henry to Poins, "thou art a blessed fellow to think as every man thinks." It is rather amusing also to read, in the succeeding article, entitled "Criticism and Commerce," the statement that the only reason for the publication of any work will be its inherent excellence—"it will be taken on its own merits without regard to any other consideration, such, for instance, as the presence or otherwise of its owner's name in the advertisement pages of the magazine." Does the editor, who writes this and the preceding article, really suppose that he has the monopoly of this virtuous attitude? Most editors of a high-class magazine, whether in art or literature, would take that as too much a matter of course to make any boast of it. In the articles on and illustrations of ancient work in the same number the magazine fully keeps up the reputation it has acquired. Mr. Claude

Phillips contributes an interesting article on a beautiful Renaissance bronze relief of dancing figures now in the Wallace Collection, and which is a version of a late Greek or Græco-Roman relief in the Louvre; the two are illustrated side by side. We quite agree, however, in Mr. Phillips's conclusion, that the Hertford House relief is so superior to that in the Louvre, that the latter is not likely to have been the original from which the Renaissance sculptor copied. Other articles are, one on a collection of English glass in the South Kensington Museum, by Mr. C. H. Wylde; one on "English Secular Embroidery of the XVIth and XVIIth Centuries," by Mrs. Head; on "Early Staffordshire Salt-Glazed Wares in the British Museum," by Mr. R. L. Hobson; and on the early Milanese painters, Butinone and Zenale, by Mr. Herbert Cook. The frontispiece is a reproduction from a beautiful Romney portrait in the collection of Sir E. Antrobus, said to be here engraved for the first time.

The *Berliner Architekturwelt* has a very interesting feature this month: reproductions of six designs by Schinkel for scenes in grand opera. Four of them are for "Die Zauberflöte" an opera which is so suggestive for scenes in which a mystic and symbolic architecture plays a prominent part. One would like to see a grand revival of "Die Zauberflöte" with Schinkel's scenery. Some very good modern buildings are illustrated. A private house in Thomasius-strasse, Berlin, by Herr Jatzow, is an admirable design, far more severe and restrained in style than is usual with modern German street architecture. The "Spindlerhofs" building in the Wallstrasse (Messrs. Kayser and Von Groszheim) is a business building of sumptuous solidity and decoration, founded on Byzantine Romanesque, and looking rather as if it had come out of the portfolio of H. H. Richardson. It is somewhat over-ornamented, but a notable building nevertheless. Some illustrations of sculpture are very gratifying, inasmuch as they show much more refinement and less of the blustering spirit than we find in so much modern German sculpture. A drinking-fountain by Herr Hubatsch—a nude nymph kneeling in a niche and holding a pitcher—and a clock by Herr Wilhelm Otto, with a symbolic figure on each side, apparently representing the Future and the Past, or Hope and Regret—are works of real poetic feeling.

The *Art-Workers' Quarterly* is a most useful number, as it contains so many examples of decorative design in textiles, glass, wood-carving, &c., which may serve as models or suggestions for young designers. As a frontispiece there is an elaborate colour reproduction of one of the Hardwicke hunting scene tapestries, with a technical description of the work; and "Practical Notes on Figure Embroidery," by Mrs. Hole, and "Gesso Work," by Mr. K. M. Eadie, are most instructive on the technique of each subject.

Public Works is full of interest. It commences with an article, "Norwich a Port," by Mr. Arthur E. Collins, the City Engineer of Norwich, and also engineer to the River Yare Commissioners, and describes and illustrates, in great detail, a scheme for so treating the river Yare, as to put Norwich as she was in old times, in direct connection with the sea; not counting on bringing the largest class of vessels up to the city, but providing a continuous 15 ft. channel, which would allow the passage of a useful class of moderate-sized trading vessels up to the city. "Sea-coast Erosion and Remedial works" are considered in an article by Mr. R. G. Allanson-Winn; "Municipal Marseilles" is the subject of an article, largely illustrated, by Mr. W. Kelsey; "The Massachusetts Institute of Technology" is described and illustrated in an article by Mr. A. T. Robinson; Mr. W. H. Humphreys has collected a great deal of interesting history on the curious subject of "Wooden Water-pipes," "The Baltimore Sewerage Problem," "The Cleansing of Glasgow," and "A Californian Sewage Farm," are the subjects of three other articles. In an article on "Mosaic and its Modern Uses," which contains nothing new as to the artistic capabilities of the material, Mr. Mackenzie Macbride draws attention to some practical advantages possessed by mosaic, for floors and steps. Among the illustrations to an article on "Municipal Trieste," we note with interest an attempt to treat a gas-holder in an architectural manner; or, rather, we should say that this is the brick-built case or screen of a gas-holder; otherwise the architecture illustrated is not of much interest. "Designing a City," by Mr. Burton T. Ashley, Civil and Consulting Engineer to the Chicago Corporation, is a fascinating title. The author had the task of completely laying out and designing *ab initio* the new Zion City, Illinois, about forty-two miles from Chicago, founded and commenced in 1899. But unhappily the block plan of the city does not impress one with the capability of its designer for making the most of the opportunity. It is laid out like a gridiron, with the square Shiloh Park in a central position, and a wide central boulevard running up to it as a backbone. The best point in the plan is the four avenues, which radiate at an angle of 45 deg., one from each corner of the park, straight across the gridiron of rectangular streets; but, on the whole, it is a prosaic plan, and much more might have been made of it.

In *The World's Work* an article with the rather startling title, "Crossing the Channel by Railway," does not contemplate any reversal of the mad scheme (once much talked of) of a cross-channel bridge, but only the employment of much larger and wider boats, which will take a train bodily on board. It is done already, it appears, across the wider area of Lake Michigan (sixty-five miles) in America. The Channel, however, is a peculiarly rough passage in stormy weather, and we should prefer to cross on a boat without a train on it. No reference is made in the article to the slight difference in guage between English and French railways; it is trifling, and perhaps not sufficient to make a difficulty in running the same carriages on both; but it should have been mentioned.

The *Antiquary* contains an article rather out of its usual line, on "Helleinstic Art," by Miss Constance E. Haldenstein—an American lady we presume, from her use of that fearful phrase, "right back of all three," in a comparison between Greek sculpture and German and French literature. The subject of the article is the idea that there is an analogy between the development of Greek Art and the developments of literature in different countries and ages; and she makes some points in the comparison; but this is rather fanciful than antiquarian. However, the article suggests thoughts. "Letters from France and the Low Countries, 1814-1819," are very interesting. "Grâce Dieu and its Associations" is an article by Mr. H. Butler Johnson on the remains, near Charnwood, of what was once a great Leicestershire priory. The article is very complete and well written, and should tempt anyone travelling in that neighbourhood to contrive a visit to the spot—anyone, that is, of the minority who care for such ancient memories and relics. Mr. Clephan concludes his article on "Two Suits of Armour in the Museum at Berne."

The *Quarterly Review* contains an article by Mr. Lawrence Binyon (the *Quarterly* seems fairly launched on the "signed article" system) on "The Art of the Nineteenth Century," a very large title, implying, however, only a review of a book by that rather captious art-critic, Mr. D. S. MacColl. It is a sensible review, among other things for finding fault with Mr. MacColl's "preciosity" of literary expression, and his view of painting as to be judged only by the execution and not by the subject. "Who is the greatest painter—Louis David in the temple, or Chardin in the kitchen?" asks Mr. MacColl. To which Mr. Binyon gives an apt reply:—

> "No one thinks that David was a successful painter of heroic subjects, while every one is agreed that Chardin's interiors and still-life pictures are unsurpassed. We raise no objections against so obvious a truth; but we protest against the way in which it is put. The whole passage seems to imply a denial that any one subject-matter is of more worth than another. But suppose we compare Chardin, the perfect painter of still-life, not with those who failed in great themes, but with those who succeeded—with Rembrandt, say, or Velasquez. Either of those masters could doubtless, as painters, have surpassed Chardin on his own ground; but, in the main, what gives Velasquez and Rembrandt their greater glory is the superior value and interest to humanity of the contents of their art, the immeasurably wider and deeper illumination which they give to life."

That is just the point. There is a school of critics now who seem to think that subject is of no consequence in a picture, only execution: a heresy almost as deadly (we will not say quite) as its opposite. "After all," as Mr. Binyon says farther on, "we cannot separate art from life": it is unquestionably the worse for both if we do. In another passage quoted Mr. MacColl, to do him justice, seems to recognise this, and recognises it in opposition, moreover, to his idol Whistler. Was the "Portrait of my mother" only an arrangement in black and grey? Then why not have taken a coal-scuttle, in which such an "arrangement" might have been obtained, "uncontaminated by any but the faintest human feeling." In the main, Mr. Binyon's article is a sound and sensible one. It is followed by an important and weighty article on "Matter and Electricity," by Mr. W. C. D. Whetham, to which we may return.

The *Nineteenth Century* contains an article by the Secretary of the Royal Academy on "The Royal Academy Schools"; practically a history of their foundation and development. The most notable point recited in it is the recent decision of the Academy, arrived at after much discussion, to abolish all preliminary or primary teaching in the schools, on the ground that in the present day there are ample opportunities in art schools all over the kingdom for acquiring preliminary knowledge of drawing and painting, and that the Academy should devote its resources to higher branches of instruction and raise its standard for admission, so as not to waste its energies on pupils who would never get beyond mediocrity. The present conditions of admission are given; we have not space to quote them here, but we consider that the Academy are absolutely and entirely right in their decision. Mr. Eaton remarks at the close of the article that it does not pretend to be more than a dry recital of facts; "but at anyrate they are facts, which is more than can be said of some of the statements that have recently been made about the Royal Academy." To the same number the Rev. E. Ledger (Gresham Professor of Astronomy) contributes a valuable article on "The Nebulæ"; a summary of the present state of astronomical knowledge in regard to these, the most puzzling and most elusive to the observer of all heavenly bodies.

The *Monthly Review* contains an article by Mr. Paul Waterhouse on "Audiences and Exits," suggested no doubt by the recent terrible affair at Chicago. What he says is not for the most part new to our readers, but it is a very useful article to publish in a magazine for general readers, and may do good. One suggestion which Mr. Waterhouse makes we may call attention to in regard to exits from the upper gallery, which, for reasons of line of vision, is necessarily the steepest in section. Taking the usual arrangement of two steep stair gangways leading up to the two exit doors, he suggests the danger that those ascending the gangways from the lower seats may be liable to come into collision with those who approach them sideways from the upper seats, and a block would thus be created which would lead to a panic crush. Mr. Waterhouse suggests that a door at each side, instead of the two at the back, leading to a side lobby with the stairs descending at the same angle as the slope of the gallery, would give less opportunity for a block, and would avoid the anomaly of the audience having to mount to the top of the gallery in order to descend again. This last point we fully admit, and it is worth considering; as to a block, it is to be feared that if once people lose their heads and take fright there will be a block wherever you place the door. Mr. Waterhouse refers to the recent case of a fire in a school where the children were got out in safety in a few minutes by the admirable tactics of the mistress in playing a march for them on the piano and getting them to march out in regular order to it; and he suggests that audiences in theatres might very well be drilled sometimes in this method of leaving a building. We are glad to see that people are coming to recognise the sense of this. Nearly twenty years ago we were, we believe, the first to make the suggestion that if audiences, when there was a fire, would only have the sense and coolness to march out two-and-two, as soldiers would be marched out of a building, they could all be in the street in two or three minutes without danger or difficulty; and the only recognition we got was the receipt of an abusive anonymous postcard denouncing the author of the paragraph as a "fool!"

In the same magazine Mr. Basil de Sélincourt returns to the subject of the frescoes of the Life of Christ in the lower church of St. Francis at Assisi. Having already expressed a conviction that they are not, as commonly believed, Giotto's, he proceeds in this article to suggest an author for them—Giovanni Gaddi, the son of Taddeo Gaddi, hitherto little more than a name. The reasoning by which this conclusion is arrived at is interesting, especially in

view of the quotation from a description of the Assisi paintings in the "Collis Paradisi Amænitas" written by Father Angeli of the Franciscan Order in the XVIIth century, and in which it is distinctly stated that "Jo. Gaddus Taddei" (the work is, of course, in Latin) painted the history of Christ "in cupa sinistri brachii" of the chapel—"in the left transept." The writer suggests that the author of the tract, being a priest and accustomed to look down the building from the choir, would naturally regard that transept as the "left hand" one, which to an ordinary spectator entering the church would be the right hand side. The whole argument, in the light of this quotation, seems worth serious attention.

In the *Century* Miss Edith Wharton continues the fascinating subject of Italian villas in an article dealing this time more especially with "Roman Villas," the most fascinating of all, seeing that with the beauty of their architecture and gardens is combined the association of a whole roll of historic names. Two fine chromolithograph views of the Villa Medici and the Villa Chigi, and an even better black and white one of the Villa Pia, add to the interest of the article. Among other attractions of the number are a coloured reproduction of a charming portrait by Nattier, an engraving by Mr. Timothy Cole of Velasquez's portrait of Philip IV., and an article on "Bric-à-brac Auctions in New York," a subject certainly not without interest from more than one point of view.

In *Scribner* we are again on the subject of architecturally treated gardens, this time "Some Gardens in Spain," by Helena Rutherford Ely. The Renaissance character derived from Italy has penetrated into some of these, though others have a character distinctly Spanish, or, rather, Moorish; less regular than the Italian garden, and richer and more Oriental in character—for orientalism does not go entirely by longitude. The view of the court and gardens in the Palace of the Generalife, Granada, looks at first sight as if it was a view in the Alhambra. The most impressive thing in the illustrations is the sombre cypress alley leading to these gardens. Under "The Field of Art" is an article on the new portal of St. Bartholomew's Church, in Madison-avenue, New York. A screen wall with three great doorways has been built in front of the church as a memorial to the younger Cornelius Vanderbilt, with doors of bronze, a sculptured tympanum over each doorway, and an alto-relief frieze connecting the doorways at the springing. From the illustrations, small in scale it is true, it seems a fine piece of work, founded on Romanesque models. In regard to the relation between the modern and the ancient, we may quote the concluding paragraph of the article by Mr. Russell Sturgis, which is of some interest as a piece of criticism :—

"One may think that in the New York church the carved friezes in the white stone above the doors are too minute and jewel-like for such a composition in what may still be called the Romanesque style. Even the tympanums, though on a larger scale of design, are so delicate that one is inclined to wonder at their position out of doors. On the other hand, the larger frieze, that of the outer wall, with the culminating groups at the centre doorway, is of singular boldness and intensity, being one of which the separate figures are so small. It will be noted that these figures are often semi-nude, and that the general conditions of these figures, their pose, their grouping, their movement separately and taken together, is unusually descriptive. Much in the way of action is expressed by the gestures of these little figures. In all this, the Romanesque tradition is hardly departed from, and if that tradition and the Romanesque style of architectural design is mentioned at all in this connection, it is because one cannot but compare the sculpture of this portal with that of the fronts of Saint Gilles and of Saint Trophime, and that the immediate impression given is one of extreme modernity set into the framework of an ancient design. The reason for this is not far to seek. Modern art is alive as to sculpture of the human subject, but it is not strictly alive as to architecture. There is a XXth century sculpture of American nationality now, whatever its very recent origin may have been, but there is no American architecture, nor any XXth century style anywhere, nor any XIXth century style. For all these matters of purely decorative art—that is to say, of non-representative and non-expressional art—one still goes to the past, and takes its creations with but little change."

In the *Pall Mall Magazine* Mr. E. Rimbault Dibdin gives, under the title "Pictures and the Public," a critical summary, with a good many illustrations, of the present contents of the Walker Art Gallery at Liverpool, which contains two or three remarkable pictures, a good many good ones, and some very poor ones, that ought never to have been bought for a permanent gallery. Some of the anecdotes as to the way the public are affected by the pictures are significant, but hardly encouraging. An illustrated article on Devonshire House serves to show what sumptuous interiors are hidden behind that prim brick front.

In the *Gentleman's Magazine* "Open England," by Mr. John Hyde, is an attempt to convey a sense of what would have been the impression created by English scenery before the days when everything was enclosed, when the traveller must have seen before him everywhere stretches of wild, open country. It is a well-written article on a subject of picturesque interest.

The *Revue Générale* contains a long article on "Les Régies Municipales en Angleterre" (Municipal Government), by M. Joseph Le Nève, dealing mainly with the question of the extent to which municipal enterprise should be carried in such things as the supply of gas and water, etc. M. Le Nève sums up against municipal undertakings of this kind. He goes too far in his condemnation, but it is a thoughtful article, and worth attention by those interested in municipal work. The three special dangers which the author sees in the extension of municipal undertakings, shortly put, are (1) The increase in the number of official employees; (2) these employees, being electors, become indirectly their own employers, and are likely to use their influence to strengthen still further the power of the Municipality; (3) "déloppement anormal du functionarisme qui tente les âmes lâches et faibles," *i.e.*, leading to a seeking for permanently salaried posts instead of devoting their energies to making a career of their own; thus weakening the spirit and character of individuals. The following remarks are in line with some of our own recent observations :—

"Même dans les cas où la régie est une source de profits pour une ville, ce résultat heureux est contrebalancé par les charges terribles de l'emprunt auquel le pouvoir communal a dû recourir pour former son capital industriel. La dette locale anglaise est énorme et doit donner à réfléchir aux municipalistes les plus convaincus. L'extension de la régie a porté la dette locale de 93,000,000*l.* en 1875 à 276,000,000*l.* en 1899. M. Vermaut constate que du train où elles v vont, les communes anglaises courent droit vers la faillite."

The *Estate Magazine*, a monthly publication which we were not acquainted with, but of which a copy of the February number has been sent to us, contains an article of some practical interest by Colonel Raikes, on "Labourers' Cottages," chiefly in reference to cottages which are being erected on the Marquis of Hertford's Ragley estate, of which we gather that Colonel Raikes is the manager, and accompanied by plans, sections, and elevations of a couple of cottages of the kind that are being built on the estate. The architect is Mr. F. C. B. Dabbs. These cottages, though very simple, should have a good effect, and are well planned. From the following description it will be seen that they contain one or two new ideas for this class of house :—

"These cottages are built of good red bricks and roofed with Broseley tiles, the upper story being covered with rough-cast by way of ornamentation. The living-room is floored with block wood paving laid in pitch on concrete, so should be impervious to damp and almost everlasting in wear. The other ground-floor premises are floored with blue paving bricks on concrete, and the space between the back door of house, the door of wash-house, and the soft water tank, also paved. Instead of a second sitting-room the spare space downstairs has been utilised as an open verandah, which is, so far as I know, a novelty, but I think a good one. It will be enclosed with a rustic gate and fence not shown in plan, and can be used for many purposes, among others as a dry run for the children in wet weather, as a place where the man can sit and smoke or read on summer evenings, where his wife can bring her work, where washing may be hung to dry, where meals can be taken or visitors interviewed and for many other purposes. The living-room is of comfortable dimensions, 13 ft. 6 in. by 12 ft. and 8 ft. high; it is absolutely protected from draught, with lobbies to both outer doors. It is convenient of access to a good airy larder or pantry, and also to a roomy cupboard arranged under the stairs. It might also, of course, open directly into the wash-house, but I prefer the slight inconvenience of stepping out to it through the back door to having the reek of the copper when brewing or washing permeating the house."

It is admitted, however, that no ordinary farm labourer could afford to pay a rent for these that would be remunerative. "The loss must be divided between the landlord and his farm tenant." Profit of another kind, however, may arise indirectly from such a beneficent effort.

In *Everyday Electricity*, a new publication, an instructive article by R. J. Nicholson describes the uses of electricity in farming. He suggests that in those cases where the work on a single farm is insufficient to justify the laying down of electrical plant, two or three farmers should club together and share the expense. Other articles describe the electrification of the Liverpool and Southport Railway and "Electric Power in Textile Factories."

FURNITURE AT THE ROYAL SCHOOL OF ART NEEDLEWORK, SOUTH KENSINGTON.

MR. ERNEST W. GIMSON has a small exhibition of furniture at the Royal School of Art Needlework, which will be open till March 26. Some of the exhibits have been seen before at the Arts and Crafts Society Exhibition last year, but the greater part are new works. Mr. Gimson is an architect as well as a craftsman. The wholesome influence of a workman's knowledge is evident in the photographs, hung round the room, of cottages and stables built from his designs. Such building as this cottage architecture does not involve the perplexities of modern architectural practice, but it helps to resuscitate and keep alive local traditions of building, the use of local material in preference to importing undesirable novelties, and the interest of the workman in his work. These were once qualities inseparable from the homelier kinds of building. The furniture of a house bears such an intimate relation to the room it adorns that no furniture can look well in an ill-planned or over-lighted room. An architect in planning a room should bear the furniture in mind, but it is a mistake to suppose that he can design it himself without being in intimate touch with workshop methods of construction Furniture passably successful may result, but nothing to compete with or replace the fine periods of English furniture. On the other hand, one accustomed to think chiefly of the domestic side of building is at a loss when confronted with the complex conditions under which larger architecture is produced nowadays. Public and commercial buildings do not, as a rule, show the same art that is evident in modern domestic architecture of the best type, but to abandon the one for the other—the easier and pleasanter calling—will not lift architecture on to a high plane. If the movement that there is towards better things is to advance, the best men must face the difficulties and show the way. If art is ever to be the daily pleasure and delight of both workman and artist and public that it once was, it will root in architecture and spread through all the lesser arts.

This by the way; Mr. Gimson has the ingenious mind and the all-round knowledge and training which can make of furniture once more a delight. His work is mostly based upon the carpenter's furniture of the XIIIth and XIVth centuries, rather than of the XVIIth and XVIIIth. The simple necessities—much fewer in number than is usually held to be the case—are what is shown at the present exhibition; tables and chairs, cupboards and boxes; rather substantial perhaps for modern ideas of elegance, but of true design based upon proper construction, and sufficiently ornamented. More refined work is to be seen in the beautiful inlaid pieces—a sideboard, writing tables, etc., of mahogany overlaid with burred elm. There is a very ingenious linen cupboard of English walnut, the doors when open forming runners for the trays within to slide out upon. The chairs shown are superior to the crude, expensive, and often vulgar article exhibited at some of the Arts and Crafts exhibitions. With regard to the use of unstained English oak for furniture, it is quite unsuitable for use in towns, where it soon gets discoloured; but it is delightful as furniture in a modern country house, especially for rooms which are much lived in and not merely ornamental. We have no sympathy for the affectation which is so evident in much of the new furniture shown at the Arts and Crafts; but there are to be found amongst it, and mostly hidden by it, pieces of design and workmanship that would be ornaments to any room and rank with any period of English furniture, and in these there is a hope for a future furniture that is neither a direct copy of the old nor a passing novelty. Any endeavour to make a man's house a place of culture, of restfulness that is, of beauty to the extent that every part of it shows a reasonableness and intelligent perception of the fitness of things is to be welcomed, for how drear and comfortless is the average house that the average man makes the centre of all that he cares about; and, it may be added, how unaware he is of the ugliness around.

APPOINTMENT.—Mr. T. A. Hayward, Borough Surveyor of Stamford, tendered his resignation to the Town Council on the 9th inst., having accepted the post of Borough Surveyor and Engineer of Battersea. The resignation was accepted, to take effect on March 31, and steps were ordered to be taken to appoint a successor.

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THE ARCHITECTURAL ASSOCIATION SPRING VISITS:

II.—TOWN HOUSES IN THE WEST-END.

SATURDAY, February 6, was the occasion of the second spring visit, when a large body of members availed themselves of the opportunity for seeing the interiors of three town houses which have recently undergone structural and decorative repair. In each instance the work is the design of Mr. J. L. Williams, who kindly met the party and drew attention to the numerous points of interest arising from the various operations.

No. 11, Hill-street, Mayfair, which was the first house visited, has received no very extensive alteration, but has been subjected to an almost entirely new scheme of decoration; the ball-room and the main staircase alone remain in their previous state. At the rear of the premises two new buildings were seen—the stables and the motor-house. Some structural precautions were taken, in the nature of new iron stanchions and girders, to strengthen the upper parts of the house, while the old second and third timber-framed floors were removed to give place to modern fire-resisting construction.

Broadly speaking, the character of Mr. Williams's work is based directly upon that of the best period of English Renaissance, and it is not too much to say that both in detail and general effect the results are extremely successful. On the ground floor the inner hall has been extended by the inclusion of a small back room, and the ceiling is charmingly treated with intersecting barrel-vaulting executed in plaster; this, with the enriched cornice and Cippolino marble columns, provides a pleasing vista from the entrance. To the right of the front door is the morning-room, where an excellent scheme of panelling in English oak, with a deep plaster enriched frieze, has been introduced. The doors and chimney-piece form part of the treatment, the latter also being intended to receive a portrait by Mr. Shannon. The carving throughout is well executed by Messrs. Martyn; the swags and drops, designed in the manner of Grinling Gibbons, are beautifully and delicately wrought. In the adjoining dining-room colour plays an important part in the new work. Paintings of allegorical subjects taken from the previous decoration are here introduced, and evidently form the basis of much of the panelled treatment of the walls and ceiling, to which other coloured enrichments are applied. But the principal feature is the raised annexe, whence the daylight of the room is derived. This now occupies the position of an old conservatory, but a structural alteration in the removal of this part of the back wall of the house has provided additional floor space. The treatment is in every way satisfactory; Cippolino columns, a raised marble floor and lead glazing to the mullioned windows add to the success of a well-contrived alteration.

It should be stated that practically the whole of the windows in the house are new, the greater part of them consisting of oak-transomed frames with metal casements and leaded lights.

On the first floor, facing the street, the drawing-room is incomplete, although the heavy modelled plaster ceiling was to be seen; but the most interesting room in the house is perhaps the adjoining boudoir, which has been transformed into a room possessing peculiar charm and interest; and although English influence is absent, the character of the design may be said to find Italian precedent. The walls are covered with panelling, comprising a low dado, above which rises an order of pilasters and entablature forming large panels, which will eventually be filled with tapestries. The panelling is finished principally in Italian pollard walnut veneer, with gilt mouldings and other enrichments; but considerable care has been exercised in allowing the figure of the material to supply the dominant note in the design. The space between the panelling and the ceiling, some 3 ft. in depth, is treated as a plaster cove, and the length is broken up by a series of groins which produces an effect of vaulting. To this cove an interesting scheme of small scale coloured design, recalling Pompeian decoration, has been applied. This was executed, under the direction of Signor Palagi, by Florentine workmen, who have specialised in this kind of work. The result is very happy, although perhaps too elaborate, and when lighted by electric lamps concealed in the cornice of the panelling the effect was by general consent considered to be most successful. The ceiling is similarly treated, and includes paintings from the work previously existing. The coloured marble chimney-piece was also admired.

A new staircase, with domed top light, leads to the second floor, where the principal bedrooms are planned in two suites. To the front are bedroom and dressing-room, panelled in Tabasco mahogany, and intended to receive "Empire" furniture, some of which was in position. Facing the back of the site is a large bedroom, panelled with veneered Italian walnut, but without the Italian influence which characterised the design of the boudoir below; above the panelling is a good modelled plaster frieze, the work of Mr. J. S. C. Carr. In the bath-room of this suite an ambitious marble scheme has been resorted to; the marble bath is sunk below the floor-line, and has a raised moulded curb and step producing a depth of about 2 ft. 3 in., all of which is executed in Cippolino and Norwegian pink marbles; the floor also is laid to a simple design in these materials. Further, there is on this floor a small boudoir over the ball-room, having satin-wood panelling and glass-fronted china cupboards, designed in excellent taste; this is the work of Messrs. Gill and Reigate.

The stables are entirely rebuilt; the elevation to Hay's-mews is of two stories, built with Portland stone and thin red bricks, the roofs covered with tiles. The first floor windows are circular, whilst an arcade-like effect is given to the ground floor; and all windows have lead glazing. The motor-house shows a decided departure from the usual design of such buildings, which arises from the particular materials employed. English oak posts and beams carry a plastered first floor story, which is finished with oak cornices and a large segmental pediment, covered with lead; oak doors and windows are used, and a tiled roof covers the building. The effect is quite satisfactory, and it was understood that special permission for the construction was obtained from the County Council.

The next house visited was No. 9, Hyde Park-terrace. Small alterations have taken place, but general redecoration, somewhat on the lines already described, is in course of execution. Mr. Williams is very happy in his ceiling treatment of high, narrow corridors. Here, in the entrance lobby, as indeed in all other similar positions, the unpleasant height is brought into good proportion by the introduction of a simple kind of intersecting barrel vault, done in plaster, in which hand labour is made to show. Another good point seen in the hall of this house is the breaking up of the long, straight flight of steps ascending from the hall, by turning the lower half-dozen steps at right angles to the flight, inserting a small landing and two Cippolino marble columns at the foot. The dining-room is panelled in oak, having various carvings, notably some delicate undercut drops and swags. The drawing-room has received a structural alteration in the removal of the wall which separated the front and back rooms, so that one large room from back to front is obtained, while the front room, originally extending the full width of the house, is now intersected by an arcade. In the dining and drawing rooms the design of the ceilings is heavy; that in the latter is particularly so, and excited adverse comment; whilst the whole of the other works elicited unanimous praise. The sunk marble bath and other features attracted much attention.

By kind permission of the owner, a party of members, limited to twenty, then drove to the third house, 10, De Vere-gardens, where work of a kindred nature has recently been carried out by Mr. Williams. Here there is a similar staircase alteration, with African red marble columns, whilst the hall is vaulted in plaster. The principal rooms are panelled, and there are some modelled plaster ceilings by Mr. Lawrence Turner.

This concluded a thoroughly profitable and enjoyable series of visits, of which the opportunity was greatly appreciated by the members. In response to a hearty vote of thanks, given enthusiastically upon Mr. Ambler's proposal, Mr. Williams said it was a great pleasure to show his work to the young men present, and expressed the hope that any who cared to see the completed works might do so on a future occasion.

THE SURVEYOR'S INSTITUTION:

GARDEN CITIES.

AN ordinary general meeting of the Surveyors' Institution was held on Monday evening, at No. 12, Great George-street, Westminster, Mr. A. Buck, President, in the chair.

The minutes having been read and confirmed, the Chairman announced that the Council unanimously recommended that Sir A. de Bock Porter be elected a member of the Institution. The recommendation having been agreed to by the meeting,

The Secretary, Mr. Julian C. Rogers, announced the result of recent examinations.

The Hon. Secretary, Mr. Currey, then read a list of some donations to the library and the Library Fund, and on the motion of the Chairman a vote of thanks was accorded to the donors.

The discussion was then resumed on the paper by Mr. Ralph Neville, K.C., on "Garden Cities as a method of Industrial Distribution." *

Mr. H. T. Eve said it was very interesting from a surveyor's point of view to find that 4,000 acres within forty miles of London could be bought at, practically speaking, market prices. The Garden City Co. had to buy first from one owner, and then from another, and the method adopted was to go quietly to the owners to find out if they would sell, and then, by paying a deposit of only 5 per cent., securing the option of purchase, terminable within five years. The 4,000 acres were bought from about seventeen people, and the timber was included in the price of the land, a little of which land was copyhold. The idea was to create a town in the middle of those 4,000 acres, and he believed that that town would be some day created and would be a success. It was easy to criticise, but the directors would be glad of a little more help and a little less criticism. As to the local authorities, the Rural District Council welcomed the scheme, and they were making some common-sense by-laws for the Garden City. As to manufacturers, there must be a few in the Garden City, but he did not think there need be many, and from the promises already obtained, it was clear that the small number required would come in. A good part of the estate was eminently suited for residence, and was only forty minutes' railway journey from town. He hoped the Company would not limit the town to 30,000 inhabitants, for there was room for a much larger population on the site, and there would be plenty of fresh air without the agricultural belt referred to. There would be one street 150 ft. wide, and the other streets would be similar to what would be found in any other well-regulated town. He was afraid that the directors might be carried away by their love of fresh air and make the cottage plots too deep, and if they did that they would lose their profit per acre on the estate, which was simply a big building estate. If the cottage plots were laid out 150 ft. in depth that would be more than liberal, and he hoped the depth would be less. As to the terms of letting the land, that was a difficult matter. The Company could not part with the freehold, and should they, therefore, let on 99 or 999 years' leases? And what scheme should be put forward so that the ground rents could be reviewed from time to time? For that they should be reviewed was essential to the success of the scheme. The scheme was being promoted by hard-headed business men, and it seemed to him that it was bound to be a success.

Mr. H. T. Scoble said that Mr. Neville had told them that it was not intended to carry out the scheme detailed in Mr. Howard's book on Garden Cities, but he found that one of the objects of the Company was "to promote and further the distribution of the industrial population upon the land on the lines suggested in Mr. Howard's book on Garden Cities, and to form a garden city for agricultural, commerical, and residential purposes, or any of them, in accordance with Mr. Howard's scheme, or a modification of it." It seemed to him that he was justified in his suggestion that the scheme would be carried out, as far as possible, on the lines suggested in the book. Where the Garden City showed its chief weakness was in regard to manufacturers, who were hardly mentioned in the scheme brought forward. He had been accused of criticising a pioneer movement to relieve the congested state of large towns; he advocated such movements, but on the lines pursued by Mr. Cadbury and Mr. Lever. The directors of the Garden City Co.

* See our issue for January 30, p. 105.

said that they did not mean to let any one idea stand in the way of the development of the site. If they were prepared to grant manufacturers freehold sites, then one of his objections to the scheme would be removed, for a manufacturer, in moving into the country, desired to purchase the freehold of his site. He foresaw a large capital expenditure on water supply, sewerage, roadmaking, etc., on the estate. It was suggested that many of these modern conveniences could be provided economically on the site; that was so if the Company had an enormous capital and were authorised by Parliament to pay interest out of their capital fund for a series of years; and if that were possible they might get people to invest; but who was going to tie up his money in a speculative affair for ten or fifteen years and then only get 5 per cent.? The authors of the scheme were very sanguine that the necessary money would be forthcoming, but so far only 80,000*l.* had been subscribed. It was rather naïve of Mr. Howard to remark that if the 300,000*l.*, which was thought to be necessary to carry out the scheme, was not sufficient, then more could be provided. They were told that the Company did not intend to build factories, but that they would "set forces in motion" to supply the necessary capital for that purpose. That was all very problematical, and also that they could supply labour for girl members of families. On three grounds he found it impossible to imagine a successful result. In the first place—the difficulties of an entirely new scheme had been underestimated and the advantages had been exaggerated; an enormous capital expenditure would be required, and many of the features of the scheme could not be realised for a long time. Secondly, the predominant partner, the manufacturer, was hardly brought into the scheme at all. Manufacturers were unanimously in favour of managing their own affairs, and they were apprehensive of anything even remotely socialistic in character, and they wanted the advantage of a freehold to start with. And, thirdly, a complete settlement must be established, and he could not see how a desire on the part of one manufacturer to start a manufactory on the site for sixty men was anything like sufficient to start a city of 30,000 people.

Mr. W. Woodward said that when once the city was started, sewerage, lighting, water-supply, and such things, would be matters of minor importance, and so with the railway service of trains. Something like the Garden City was required, and he hoped to see it realised. It was an ideal scheme, but there was very much that was practical in it. The loss of stamina referred to was not due to living in towns. The Londoner, as a rule, was a healthy young fellow. As to workmen's dwellings, he had said before that they could be easily provided at small cost if we could get the British workman to work. The British workman, by his idleness, raised the price of labour so much that rents had to be charged which were sometimes prohibitive to those who occupied the dwellings. The migration of factories was going on very rapidly. A well-known firm, Messrs. Saxby and Farmer, engineers, etc., had transplanted their works from Kilburn to Leicester, and nearly the whole of their workpeople had gone too. As to the increase of lunacy in London, that synchronised with the introduction of the Works Department of the London County Council. If tennis-courts, etc., were provided at these buildings there would be a continued increase of lunacy. He agreed that workmen should not be widely separated from their work, and also that workmen's dwellings could not be built unless the land could be got at something like 3½d. to 4d. per foot super.

Mr. Madgen said there was difficulty in finding attractive factory sites within twenty miles of London, and many points had to be considered—soil, cheap transit, etc. If cheap transit were facilitated by the local authorities of small country districts many difficulties would disappear. If outlying towns were coupled up by means of trams or light railways, and were provided with cheap power supply, they would then offer strong inducements to manufacturers to settle there, especially as many of these towns were well provided with such conveniences as baths, parks, water-supply, sewerage system, post, etc. The Garden City Co. should use their limited funds for pioneer purposes, and should not enter on such a big scheme as the Hitchin scheme; they should try and influence public opinion of the various country districts. The working-man was all right; it was the small tradesman and others who got on local authorities and misrepresented both the working-men and the upper classes.

Mr. E. W. Hudson said the scheme was a beautiful ideal very much in the clouds, but the result would depend on a financial basis; he had seen some of the best estates go wrong for want of sufficient capital. He thought that this ideal scheme was one which ought to be carried into being by Imperial power, for he did not think it was possible to carry it to perfection without a large increase of capital. To provide at first for very wide streets would be a needless expense. If the roadways were made, say, 50 ft., that would suffice, with space, planted with trees, on either side to be drawn upon in the future if necessary. In regard to fresh air, they knew very well that when it was provided in a poor man's dwelling the first thing the tenant did was to stop it out. As to the deterioration of the race, the statistical returns of the recruiting officer were not reliable, for the rate of pay for soldiers was so low that a large number of wastrels applied for admission, and these were the men who were rejected. The pay was not sufficient to attract the best men.

Mr. H. D. Pearsall said that Mr. Scoble told them that the difficulties had been underestimated. Of course they had, but that was the case with all great enterprises. It was an entire misconception to say that the manufacturer had hardly been considered, and that he did not stand to make any profit. They had to consider the kind of manufacturer they thought of in planning their scheme. He was inclined to grant that the large manufacturers like Mr. Lever or Mr. Cadbury did not stand to gain much by going to a city like the Garden City, for they had not much need for the co-operation of other manufacturers; but that was not the case with the large majority of manufacturers of the country. The majority of the manufacturers of the country employed a small number of workpeople, and had a limited amount of capital, and to all such people it was a great advantage to have the co-operation of other manufacturers. The fact that there was such a tendency for manufacturers to move out of the big cities showed the need.

Mr. E. Howard said he had not put forward a complete scheme in his book, as he stated in the work, for that would come later. Would not architects, surveyors and engineers all agree that, granted a suitable estate was found, it was easier effectively to lay out a new city than was the case at the present time and by our present methods? Mr. Scoble was entirely wrong in saying that the manufacturer was the last person thought of—he was the first to be considered, and a large number of manufacturers were distinctly interested in the movement, and out of that number the Garden City would get as many as they wanted at first. As to the amount of money raised, 85,000*l.* was quite satisfactory. They could not go to the public until the scheme was more advanced.

The Chairman said there was certainly need of some scheme to overcome the conditions which this scheme had been promoted to overcome.

It was announced that the next meeting will be held on February 22, where a paper will be read by Mr. J. H. Elwes, F.R.S., on "British Timber and its Uses."

The meeting then terminated.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, S.W., Lord Monkswell, chairman, presiding.

Loans.—The Finance Committee recommended, and it was agreed, to lend Battersea Borough Council 6,739*l.* for paving-works. Sanction was also given as follows: Chelsea Borough Council, 57,000*l.* for the erection of working-class dwellings, and Stoke Newington Borough Council 1,180*l.* for street lighting purposes.

Office Accommodation.—A joint report of the Establishment and Improvements Committee recommended that the Council should acquire the leasehold interest in Messrs. Coutts' premises, Nos. 56 to 60, Strand, for a premium of 8,000*l.*, and a net rental of 2,485*l.* per annum.

Mr. Beachcroft hoped this was not the thin end of the wedge for reviving the Adelphi site scheme for a new county hall. Incidentally he mentioned that when the Council came into existence their rental for offices was 4,000*l.* a year whereas now it was about 20,000*l.*

Mr. Robinson said this had nothing to do with any general scheme, but was an economical manner of putting an end to any improvement compensation claim.

The recommendation was agreed to.

Rotherhithe Tunnel.—Eight tenders were received for the construction of Rotherhithe tunnel at prices ranging from 958,307*l.* to 1,929,051*l.*, the chief engineer's estimate being 1,233,349*l.* The Council accepted the tender of Messrs. Price and Reeves, of London, at 1,088,484*l.* The full list will be found on our Tenders page. It was agreed to advertise for a resident engineer, to be employed, at a salary of 600*l.* per annum, to supervise the construction of the tunnel.

Kensington Fire Station.—The Fire Brigade Committee recommended that the tender of Messrs. Kerridge and Shaw to execute for 10,980*l.* the work of erecting the new Kensington fire station be accepted.*

Mr. Goodrich said he had heard that the work was offered to the Works Department at the amount of the architect's estimate and that it was refused, and yet it would be seen that a firm of contractors was willing to do it for less than the estimate.

Mr. E. Smith, Chairman of the Committee, said that was true, but all the other firms who tendered, and some of the best firms, had exceeded the architect's estimate. He hoped that the work would be carried out for the amount of the contract. The experience of the Committee was that there were always a large number of extras, and an extension of time, when contractors carried out fire brigade work.

The recommendation was then agreed to.

Memorial Tablet to William Pitt.—On the recommendation of the Historical Records Committee, it was resolved to affix a memorial tablet to No. 14, York-place, Portman-square, which was at one time the residence of William Pitt the younger.

Main Drainage Extension.—The Main Drainage Committee recommended that expenditure not exceeding 181,400*l.* be sanctioned in respect of the construction of section D of the enlargement of the northern outfall sewer between the Abbey-mills pumping station and Old Ford; that the work be carried out without the intervention of a contractor; and that the drawings, specification, and estimate of 181,400*l.* be referred to the Works Committee for that purpose.

Mr. Goodman, replying to Mr. Spokes, said greatly as he regretted the inconvenience caused by flooding in South London, the Main Drainage Committee felt that they must deal with the question as affecting the whole of London, and not to attempt to deal with any particular district piecemeal.

Mr. Spokes retorted that dilly-dallying had been the policy of the Main Drainage Committee for the last nine years, and he regretted that a committee of the Council should be so inert and lacking in a sense of its responsibilities.

The recommendation was agreed to and the Council shortly after adjourned.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Finsbury East.—Buildings on the site of Nos. 152, 152a, 154, 156, 158, and 160, City-road, Finsbury (Messrs. Cluttons for the Ecclesiastical Commissioners).—Consent.

Kensington, South.—An iron and glass shelter at the entrance to No. 66, Holland Park, Kensington (Messrs. Rawlings Brothers, Limited, for Mr. C. Wilkinson).—Consent.

Kensington, South.—The retention of a projecting shop front at No. 48, Beauchamp-place, Brompton-road, Kensington (Mr. J. Armstrong for Mr. T. Cooper).—Consent.

Lewisham.—Stone hoods to the porches to Nos. 26 to 40 (even numbers only) inclusive, Algiers-road, Lewisham (Messrs. Tompkins and Connew).—Consent.

St. George, Hanover-square.—A balcony and

* The full list of tenders will be found on our Tender page.

porch in front of No. 27, Upper Brook-street, St. George, Hanover-square (Mr. T. H. Smith for Lord Tweedmouth).—Consent.

Bermondsey.—An oriel window and turret to a proposed building on a site on the south side of Long-lane and eastern side of Great Dover-street, Southwark (Mr. H. J. Williams).—Consent.

Wandsworth.—The retention of a porch to a house on the east side of Elborough-street, southward of Replingham-road (Mr. G. Ryan).—Consent.

Wandsworth.—A one-story addition in front of a house adjoining No. 27, Gwendolen-avenue, Putney (Mr. R. J. Lovell for Mr. A. J. Skipper).—Consent.

Westminster.—Buildings upon a site on the western side of Grosvenor-road and southern side of Atterbury-street, Westminster (Messrs. Woodd and Ainslie for the Royal Army Medical College).—Consent.

Westminster.—Retention of temporary show cases in front of No. 121, Victoria-street, Westminster (Messrs. Williams and Son for Mr. W. M. Power).—Refused.

Hammersmith.—Buildings with one-story shops in front on the east side of Blomfield-road, Shepherd's Bush, southward of Blomfield-villas (Mr. E. J. Clayton).—Refused.

Width of Way.

Deptford.—Extension of period within which the erection of a school building upon the site of Nos. 8, 10, 12, and 14, Besson-street, Hatcham, to abut upon Besson-mews, was required to be commenced be granted (Mr. A. W. Collier).—Consent.

Finsbury Central.—Buildings on a site abutting upon St. John's-place and St. John's-square, Clerkenwell (Messrs. F. Chambers and Son for Mrs. L. Salmon).—Consent.

Islington West.—A building on the southern side of Brandon-road, Islington (the St. Pancras Iron Work Company, Limited).—Consent.

Kennington.—Retention of St. Saviour's Salamanca club-room and mission house, Randall's-row, Kennington Messrs. Beazley and Burrows for the London and South Western Railway Company).—Consent.

Limehouse.—A one-story building in the playground of Dr. Barnardo's Home on the east side of Bower-street, Stepney (Mr. R. H. Hill).—Consent.

Rotherhithe.—Five warehouses upon a site abutting on the southern approach to the Tower Bridge, northern side of Queen Elizabeth-street, and western side of Horselydown-lane, Rotherhithe (Messrs. Barlow and Roberts).—Consent.

Rotherhithe.—Two warehouses on the east side of Horselydown-lane, Rotherhithe (Messrs. Barlow and Roberts).—Consent.

Width of Way and Lines of Frontage.

Hoxton.—Retention of a lantern light on the forecourt of No. 23, Charles-square, Hoxton (Mr. F. A. Powell for Messrs. G. T. Dearberg and Sons).—Consent.

Kensington South.—Buildings upon a site abutting upon the east side of Silver-street, south side of The Mall, and west side of Lucerne-mews, Kensington (Mr. W. M. Weir for Messrs. H. and T. Harris).—Refused.

Paddington, South.—A one-story addition in front of a motor-house at No. 46, Hyde Park-gardens-mews, Paddington (Mr. W. Flockhart for Mr. C. S. Montefiore).—Refused.

St. Pancras East.—A building on a site next No. 11, Aldenham-mews, Aldenham-street, St. Pancras (Mr. G. H. Luetchford for Mr. R. L. Cripps).—Refused.

Width of Way and Construction.

City.—That the application of Mr. B. Norman for an extension of the period within which the erection of a gangway across Freeman's-court, City, to connect No. 1, Freeman's-court with the rear of No. 99, Cheapside, was required to be commenced and completed, be granted.—Agreed.

Width of Way and Space at Rear.

Brixton.—A cottage on the south side of Milkwell-yard, Coldharbour-lane, Brixton (Mr. C. J. Ford for Messrs. S. C. and P. Harding).—Consent.

Formation of Streets.

Wandsworth.†—That an order be issued to Mr. J. M. Jones, sanctioning the formation or laying out of a new street for carriage traffic to lead out of the east side of Wimbledon Park-road, and in connexion therewith the widening of a portion of Wimbledon Park-road and of Merton-road, Wandsworth (for Mr. J. Mildred).—Consent.

Brixton.—Permission to deviate from the plan sanctioned on October 7, 1902, for the formation of a new street to lead from Landor-road to Hemberton-road, Stockwell, so far as relates to an alteration in curves of such street (Mr. W. Hunt).—Consent.

Hammersmith.†—That an order be issued to Messrs. Richardson and White refusing to sanction the formation or laying out for carriage traffic of new streets leading out of Heath-place, Uxbridge-road, Hammersmith (for Messrs. Griggs Brothers).—Consent.

Deviation from Certified Plans.

Strand.—Deviations from the plans certified by the District Surveyor under section 43 of the Act, so far as relates to the proposed erection of the Black Horse public-house upon the site of Nos. 11 and 12, Bedfordbury, St. Martin's-lane, Strand (Mr. H. W. Budd for Mrs. R. Jones).—Consent.

Whitechapel.—Deviations from the plans certified by the District Surveyor under section 43 of the Act, so far as relates to the proposed rebuilding of No. 6, Leman-street, Whitechapel (Mr. S. Hicks for Messrs. W. Coates and Co.).—Consent.

Strand.—Deviations from the plans certified by the District Surveyor, under section 43 of the Act, so far as relates to the rebuilding of No. 37, Warwick-street, Regent-street (Messrs. H. and E. Lea for Messrs. Carrington and Co.).—Consent.

Space at Rear.

Hampstead.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of three blocks of flats on a site abutting upon the south side of Dennington Park-road and west side of Kingdon-road, Hampstead, with irregular open spaces at the rear (Mr. C. H. B. Quennell for Mr. A. Bretzfelder).—Consent.

Poplar.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building on the north side of Mellish-street, Poplar (Mr. G. Sharpe).—Consent.

Building for the Supply of Electricity.

Holborn.—Building for the supply of electricity upon the site of Nos. 2, 3, 4, 5, and 6, Fisher-street, and 63, 64, 65, and 66, Eagle-street, Southampton-row, Holborn (Messrs. Bourchier, Burmester, and Galsworthy for the Metropolitan Electric Supply Company, Ltd.).—Consent.

Means of Escape at Top of High Buildings.

Finsbury East.—Means of escape in case of fire proposed to be provided in pursuance of section 63 of the Act, on the sixth story of No. 50, Finsbury-square, Finsbury (Messrs. Gilbert and Constanduros for the London and Manchester Industrial Assurance Company, Ltd.).—Consent.

The recommendations marked † are contrary to the expressed views of the local authority.

THE LONDON BUILDING ACT.

On Monday the Works and General Purposes Committee of Hackney Borough Council reported that they had approved of the following suggested amendments of the London Building Act, 1894, being transmitted to the Building Act Committee of the L.C.C. for consideration:

(1) To require adequate means of escape from any new building of which the level of the upper surface of any floor is of a greater height than 50 ft.
(This will amend Section 63 of the present Act, which provides for a height of 60 ft., calculated in a similar manner.)
(2) Similarly in existing buildings, to require means of escape, to be provided before some future date, to be named.
(3) To require adequate means of escape from fire to be provided in any building or part of a building (not being a dwelling house occupied by not more than one family) in which sleeping accomodation for more than 30 persons is provided, or in which over 30 persons are employed.
(4) To amend Section 74 of the Act of 1894, by making provision with regard to the walls, floors, etc., which separate one building from another, or one set of rooms from other sets of rooms in the same or other buildings, and with regard to means of escape from buildings used partly for trade and partly as dwelling houses.
(5) To make provision with regard to the materials used in, and the construction of, the roof of a shop projecting beyond the main front of a building of which it forms part, and in which building persons are employed or sleep; and to require, unless other means of escape from fire are provided, a passage or passages to be constructed to form a separate and direct means of communication between the street and the main building.
(6) To make provision with regard to the construction of lift-shafts in buildings other than dwelling houses occupied by not more than one family.
(7) To provide for an appeal from the Certificate of the District Surveyor, under Section 13, Sub Section 5, with reference to existing buildings within the prescribed distance.
(8) To secure a definition of the words "in any direction" in Section 13, so as to prevent the re-erection of buildings within the prescribed distance at a greater height than the height of the old buildings.
(9) To amend the provision as to "space at rear of domestic buildings," so as to require an open space to exist at the rear of all such buildings above the level of the adjoining pavement in streets laid out before the commencement of the Act of 1894.
(10) To prevent the erection of buildings at a greater height than the width of the street, in streets laid out before 1862.
(11) To transfer to the Borough Councils the remaining powers under Part 7 of the Act, having reference to "iron buildings" and "temporary iron or other buildings" or "structures," so as to remove the confusion which now exists with reference to the provisions of Section 84. (Licences for wooden structures already transferred to the Borough Council by the London Government Act, 1899.)

Illustrations.

HOUSE NEAR WITLEY.

THIS house was designed to be faced with Godalming rubble stone, dressed with local sand-faced red brick, and roofed with red tiles.

The drawing was exhibited at the last Royal Academy Exhibition.

COMPETITION DESIGN FOR COCKINGTON CHURCH.

THE church actually built at Cockington (Torquay), from the design by Sir C. Nicholson which was selected in competition, has just been opened. We may take the opportunity to do justice to the very charming design, here published, which was submitted by Mr. A. H. Skipworth in the same competition. It was considered by the assessor not to come within possibility of execution for the sum named in the conditions, but of its architectural merit there can be no question.

The plan was that of a passage-aisle church, with one large-span roof, the aisle being got in under the flying buttresses which cross it, and which appear above the roof in one of the views.

A DINING HALL.

THIS is not a "Dining-Hall" but a "dining hall"—*i.e.*, a hall in a dwelling-house, which can also be used as a dining-room.

It has a coved ceiling, with a green band of ornament all round it. The plaster frieze is built out about 4 ft. 6 in. from the wall. The dog grate is of wrought iron, with hearth and cheeks of green Dutch tiles; the seats and chairs are covered with purple morocco leather, the wrought iron electric fitting is relieved with brass and green horn ornaments applied to the chain and wires.

All the woodwork and furniture is fumed oak, with a green and purple inlay and wax polished.

Mr. A. D. Clark is the architect. The drawing was exhibited at the last Royal Academy.

DECORATIVE TREATMENT FOR A BILLIARD-ROOM.

THIS is a design made by Mr. Hargreaves, of Liverpool, for execution by Messrs. Waring and Gillow, and exhibited in Mr. Hargreaves's name at the Royal Academy.

The room, having plenty of length in excess of that required for playing, lends itself to the "Nook" treatment. The materials are oak and plaster with a little ebony in the mantel. The opposite end of the room is to have splayed cupboards in the corners (similar in plan to the Nook) for cues, etc.

COTTAGE HOMES.

ALL these are small houses and cottages built on the Bournville Estate, near Birmingham, from the designs of Mr. W. A. Harvey, the author of the paper on "Cottage Homes," read last week at the Architectural Association, and published in the present issue. They are given partly as affording illustrations to his paper.

That marked A shows four cottages in Sycamore-road. B, two cottages in Linden-road (the plans of these will be found on the same sheet). C, cottages in Maryvale-road. D, two cottages in Maple-road, the elevations and sections of which are in the left-hand corner of the sheet. E, cottages in Sycamore-road.

ARCHITECTURAL SOCIETIES.

NOTTINGHAM ARCHITECTURAL SOCIETY.—The members of the Nottingham Architectural Society met at the Victoria Station Hotel on Wednesday the 3rd inst. upon the occasion of their annual dinner. Mr. A. W. Brewill (President) occupied the chair. In reply to the toast of "The Mayor and Corporation of the City of Nottingham" the Mayor, alluding to a remark which had fallen from Mr. Bromley (the proposer of the toast) relative to the excellent character of the supervision exercised over the drainage of the city by the Corporation, pointed out that matters had in this respect changed very much for the better, and said that at present 60,000*l.* was having to be spent owing to the fact that the work had been indifferently performed thirty or forty years ago. Mr. F. Acton gave "The Nottingham Architectural Society," and observed that the first of the threefold objects of the society was the achievement of that combination and union which, conducted upon proper lines, made for the strengthening of the best interests of the architectural profession. He was glad to know that a better understanding had been arrived at among the profession, a circumstance which would prove an advantage not only to the architects themselves but to the public. Furthermore, a better understanding had been secured between the members of the profession and the builders and contractors. Speaking of the third object of the society—namely, the improvement of the style of architecture—he said that, while not wishing to be uncomplimentary to his hosts, he did not think he could congratulate them upon having many noble examples of architecture in Nottingham at present, but signs were not wanting to show that the society was doing good and a better class of work was to be observed than in former days. The President replied, saying that he could assure Mr. Acton that the society had accomplished much excellent work, more especially during the last three or four years. He was able to give an instance in which a protest, made by the society against a competition which was not considered fair and equitable, had been supported by the Royal Institute, and said that they had the satisfaction of knowing that not a reputable architect had entered for the competition. Mr. Brewill referred also to the question of registration, which he said was engaging the attention of the Council of the Royal Institute.

ENGINEERING SOCIETIES.

THE JUNIOR INSTITUTION OF ENGINEERS.—At the meeting of this Institution, held on the 5th inst., at the Westminster Palace Hotel, the Chairman, Mr. S. Cutler, jun., presiding, a paper was read by Mr. Hal Williams on "Producer Gas Power for Factories, Cold Stores, and Freezing Works." The paper was written with the object of briefly describing the three systems of generating producer gas now in use and of drawing attention to the principles which must be observed and the errors which must be guarded against in designing a satisfactory power gas installation. Using the name in its generic sense, the author drew attention to the disadvantages which were inherent to the Dowson system of small pressure producer gas plants, and after describing generally the principles of bituminous plants, went on to deal with the suction producer gas plants, which are being so much used on the Continent for generating gas for small powers.

Some remarks were made regarding the recovery of by-products from bituminous plants, and it was pointed out that, while the only two by-products available were sulphate of ammonia and steam, it did not pay to recover the former from plants of a smaller power than from 3,000 to 4,000 h.p. Steam, however, could be generated as a by-product from any gas engine over 50 h.p., the method being to employ a boiler patented by Mr. Wilson, which was placed on the exhaust pipe of the gas engine, and which acted really as an exhaust silencer. With this boiler as much as 2 lb. of water should be evaporated and steam raised to 100 lb. pressure per brake horse-power hour. Steam raised in this way might be very valuable to certain industries requiring a small proportion of it for their manufacturing processes. Taking the average run of factory steam engines throughout the country, not less than 4 lb. to 5 lb. of coal per b.h.p. hour are required. In the bituminous plant as much as 150,000 cubic feet of power gas, having a calorific value of 130 to 150 b.t.u.'s, can be generated from one ton of slack coal. A gas engine of 40 b.h.p. requires from 70 to 80 cubic feet of power gas per b.h.p. hour; larger engines only require from 60 to 70 cubic feet per b.h.p. hour. This means that whereas a steam engine requires from 4 lb. to 5 lb. of coal per b.h.p hour, a gas engine will only require 1 lb. Further than this, the coal used in the former case must be of a better quality than that used in the latter. The author dealt at some length with the suction gas plant and pointed out its numerous advantages. With this type of plant one b.h.p. hour can be generated from 1 lb. of anthracite coal, with the great advantage that gas is only generated by the engine as it is required, and that consequently there is no waste. Comparative costs of power between electricity taken from the supply companies' mains, between gas taken from the gas companies' mains, and that generated from a producer plant were then cited. After numerous practical hints upon the working of gas engines, the paper concluded with a brief reference to the plants for generating fuel gas from wood, it being stated that as much as one b.h.p. hour can be obtained from the destruction of 4 lb. of wood.

THE SANITARY INSPECTORS' ASSOCIATION.

THE twenty-first annual dinner of the Sanitary Inspectors' Association was held on Saturday evening last week in the Royal Venetian Chamber, Holborn Restaurant, W.C. In the absence of the President, Sir James Crichton-Browne, the chair was occupied by Sir Charles Cameron, C.B., M.D., and there were present, amongst others, Lord Monkswell, Chairman of the London County Council; Professor Attfield, F.R.S., Mr. W. Moore, K.C., M.P., Mr. W. Hayes Fisher, M.P., Mr. W. Whitaker, B.A., F.R.S., Chairman of the Sanitary Institute; Dr. Shirley Murphy, Dr. Groves, and Messrs. E. Lewis Thomas, B.A., E. White Wallis, Guy Elliston, I. Young, T. G. Dee, G. H. Anderson, T. F. Strutt, H. H. Spears, R. Hughes, E. Tidman, Hon. Secretary, and several mayors of Borough Councils and others, including several lady members of the Association.

The toast of "The King" having been honoured, the Mayor of Shoreditch (Mr. Bird) proposed "The Houses of Parliament," coupled with the name of Mr. Hayes Fisher. In the course of his reply, Mr. Fisher said that sanitary inspectors admirably carried out the various Acts of Parliament they had to deal with, and as to tenure of their office, they should at least have an opportunity of appeal against dismissal to the Local Government Board.

The Mayor of Poplar (Mr. Yeo) then proposed "The Army and Navy and Reserve Forces," coupled with the name of Alderman Francis, who replied.

Mr. W. Moore, M.P., K.C., then humorously proposed the toast of "Local Government."

Lord Monkswell, in response, said he agreed with the wise words of Mr. Disraeli to the effect that not only local government but the whole government of the kingdom was bound up in sanitation. He was quite aware that Mr. Herbert Spencer, a great English philosopher—and philosophers were not always wise in all directions—said that nobody ought to have any more sanitation than he liked. He did not agree with that. Although there was a great difference of opinion as to the border line in regard to municipal affairs, he always took it for granted that sanitation was the one thing as to which everyone was agreed as being within the politics of municipal work. He was delighted to see so many people interested in sanitary work, especially so many ladies. The lady inspectors carried out their work most admirably.

The Mayor of Fulham also replied. What was wanted for the proper management of affairs in London was capacity, people with time to discharge their duties in a proper and orderly way, and people of integrity who would act fearlessly in the discharge of their duties. He believed that the administration of London was pure and clean, and that was its greatest glory.

The Chairman then proposed "The Sanitary Inspectors' Association," coupled with the name of Mr. Isaac Young, Chairman of Council. He said he was there to speak of the coming of age of their Association, the growth of which might very well be expected to go on. The membership was nearly 700, and they were expecting other kindred associations to join them, and probably the membership of the Association before the next annual dinner would be 1,000. He thought the success of the Association was largely due to the *esprit de corps* of the members, to their most legitimate anxiety to improve their social condition, to their desire to improve their knowledge of the various departments of sanitary science which their work touched on, and also to their endeavour that no incompetent person shall become a sanitary officer. He remembered the time when in Ireland—and no doubt it was so in England—people who had failed in every other path of life became sanitary officers. That was no longer the case, and in the City of London, at all events, no one could become a sanitary officer unless he could produce a certificate of competency granted by a proper examining body, and he hoped that what was the case in London and other large cities would become general throughout the United Kingdom. It required a man of education, intelligence, and culture to be a competent sanitary officer. The navy was spoken of as the first line of defence, and the army as the second; but certainly it could be said that sanitary officers, in repelling the enemies which caused disease and death, were the first line of defence and that the second line of defence was the medical officers, who cured; but prevention was better than cure, and he had no doubt that an enormous amount of disease was prevented by the vigilance of sanitary officers. The Association was deserving of the support and encouragement of distinguished men, and it had had such support, as its lists of Presidents indicated—beginning with that veteran sanitary reformer and pioneer Sir E. Chadwick, who did more than any other Englishman to awaken attention to the dangers which result from the neglect of the laws of public health and who was succeeded by another distinguished man, *i.e.*, Sir Benjamin Ward Richardson, the author of that delightful work "The City of Hygiea." He was glad that the Association was progressing in members and that they had such an interesting journal, so well edited by Mr. Tidman. As to the lady members, he might say that in Dublin there were seven lady sanitary officers, and in his opinion no one could do better work as sanitary officers than ladies. The Association was very anxious to be represented on the examining and teaching sanitary bodies, and he thought they deserved to be. The prosperity of the Association in recent years had been due very largely to the Chairman of the Council, Mr. Young, assisted by other members of Council who had furthered his efforts to put the Association in a satisfactory position. He hoped that the efforts which were being made to improve the status of sanitary officers would succeed. If the public wanted intelligent and well-educated sanitary officers they must pay them adequately and regard them very much in the way in which the civil servants of the country are regarded, and they must make it possible for those officers to feel certain of the tenure of their office and not liable to be dismissed for capricious reasons. If sanitary officers faithfully discharged their duties for a reasonable period of time, when no longer able to discharge those duties they should, like all other public servants, get a reasonable pension.

Mr. Isaac Young, in reply, said the Association was started in 1883, and two of their oldest members were with them that night, *i.e.*, Mr. R. Farrow, of Leek, and Mr. H. Alexander, of Shoreditch. The Association was incorporated in 1891, and since that time especially it had continued to grow and now they had reached an important epoch in their history. Unfortunately, since 1891 other similar associations had sprung up, but he was glad to say that sanitary inspectors were fast becoming a united body. But they were not satisfied, and they thought that, considering their growth and the importance of the work of their members, they were not sufficiently recognised by the powers that be. They were glad to notice, according to the King's speech, that there was a prospect of immediate public health legislation, and he hoped it would be found possible to provide therein security of office for sanitary inspectors. The Bill introduced into Parliament last year by medical officers was unsuccessful, but it was again to be introduced, and he was glad to learn that sanitary inspectors had been included in the Bill. Medical officers had security of tenure, and he felt that sanitary inspectors, on whose reports medical officers largely acted, were entitled to the same consideration, and he hoped that medical officers would support them in

their efforts to obtain this. As to the training and qualification of sanitary inspectors, although the Sanitary Institute had a large number of associate members who were sanitary inspectors, yet no representative of sanitary inspectors had a voice in the administration of the Institute or in its examinations. In spite of representations to the Institute as to the injustice of excluding a sanitary inspector from the Board of Examiners, the Institute had taken no steps to appoint a representative of the Association on that Board. The Association did not want to institute examinations of their own, and he hoped it would not be necessary for them to do so. There was a branch of the Association at Belfast, and he hoped it would be possible to start a branch in Dublin. The scheme of amalgamation had been practically completed, and he hoped that at the next annual dinner they would be able to announce their federation with the Scottish inspectors, who were much in advance of English inspectors. Public Health Laws of Scotland protect the medical officer of health and the sanitary inspector to a much greater extent than the public health laws of England.

Mr. E. Lewis Thomas, M.A., then proposed "Kindred Associations," coupled with the names of Mr. H. H. Spears, Chairman of the National Union of Sanitary Inspectors, and Mr. R. Hughes, of the South Wales and Monmouthshire Sanitary Inspectors' Association.

Mr. Spears said, in response, that he hoped that within a few months the whole of the members of the National Union would be followers of the standard raised by the Sanitary Inspectors' Association. Grievances under which inspectors laboured were to the disadvantage of the public health, and he hoped that they would become one united body, as there was now no reason why they should not.

Mr. Hughes having also replied,

Dr. Groves, J.P., proposed "Science and Art," coupled with the names of Professor Attfield, F.R.S., and Mr. Guy Elliston, Secretary of the British Medical Association. He had been told that art included everything we do not recognise as nature and that science was all that we know about nature. Another definition—a definition of a pupil teacher in an examination—was: art is putting two and two together and science was finding out what two and two means, which was not such a bad answer, for he himself had been taught that science was the knowledge of things and art was the putting of that knowledge into practice; in other words, science consists in knowing, art consists in doing. The science of hygiene was the knowledge of the laws of health, and medical officers of health and sanitary inspectors were engaged in the art of putting those laws into practice or seeing that other people obey them. Science taught men how to live and move and have their being in the most advantageous manner physically, and art gave to life—or gave us in our lives, if we chose, for it was very much a matter of choice and education—charm and pleasure and delight.

Professor Attfield, in response, said he had been engaged for between thirty and forty years within a stone's throw of that room in teaching an art and science which was of much interest to members of the Association, *i.e.*, the art and science of chemistry. As to teaching and examining, he hoped that examination would ever be made not the master but the servant of education. Said Huxley, when alluding to a class of candidates at an examination who had only too successfully prepared themselves by the art of cram: "They learn to pass, not to know, and outraged science takes her revenge: they do pass and they do not know." If sanitary inspectors made themselves conversant with the arts and science relating to their duties and studied not so much for gain but for the pleasure they got out of their study, the better they would fit themselves for their calling and the more useful they would be to the community. He specially recommended them to study chemistry, including, of course, facts relating to air and food and water and the terribly neglected art of ventilation.

Other toasts were "The Chairman," proposed by Mr. W. Whitaker; "The Visitors," proposed by Mr. Shirley Murphy and acknowledged by the Mayors of Battersea and Hampstead; and "The Press."

PUBLIC LIBRARY, STIRLING.—Stirling Public Library, for the erection of which Mr. Andrew Carnegie seven years ago gave a sum of 6,000*l.*, and subsequently increased it to 7,000*l.*, has just been opened. Mr. Ramsay Taylor was the architect of the building.

Correspondence.

FIXING DOOR FRAMES.

SIR,—In a building where a large number of door frames are required, it is impossible to keep them clean for staining and varnishing if these are built in as the work proceeds, particularly if the building operations extend over several years. Would any correspondent who has experienced this difficulty kindly give particulars of a simple and inexpensive, but effectual, method of securing door frames when fixed after the walls are up? STABILITY.

COMPETITIONS.

TOWN HALL, SUNDERLAND.—A monthly meeting of the Sunderland County Borough Council was held on Wednesday, when the awards in connexion with the competitive designs for the extension to the Town Hall were announced as follows:—First premium, 100*l.*, Messrs. Wills and Anderson, Adelphi, London; second premium, 50*l.*, Messrs. R. Hemingway and A. W. Bradshaw, Nottingham; third, 25*l.*, Messrs. Goss and Burgess, London.

INVERNESS TOWN HALL EXTENSION.—In accordance with the award of Mr. A. H. Crawford, the Inverness Town Council have accepted the plans of Mr. James R. Rhind, architect, for the additions to the Town Hall.

BOOKS RECEIVED.

MODERN HOUSE DRAINAGE: PLANS AND DIAGRAMS. By Gerard J. G. Jensen, C.E. (Sanitary Publishing Co., 2s. 6d.)

QUANTITY SURVEYING. By J. Leaning. Fifth edition, revised and enlarged. (E. and F. N. Spon, 25s.)

The Student's Column.

ARCHES.—VII.

AS the strength and stability of a masonry arch depend upon the position of the line of resistance, it is desirable that the point of application, the direction, and the intensity of the external forces acting upon each voussoir of the arch should be known. Unfortunately, it is rarely possible to determine these points with any degree of accuracy.

If the external load is represented by a fluid, the pressure upon the voussoirs is normal, or perpendicular, to the extrados, and can readily be determined, for the vertical fluid pressure is proportional at every point to the depth below a given horizontal plane. To the pressures so found, the weight of each voussoir can be added, thus giving the several external forces acting upon the arch. This condition of loading very seldom obtains in actual practice.

In cases where the arch supports a masonry wall, or a series of masonry walls, as very frequently happens, it is exceedingly difficult to determine even with approximate accuracy the influence of the walls upon the stability of the arch. It is very often assumed by designers that the whole weight of the masonry above the soffit rests upon the arch, but this hypothesis is not a correct one, for it is a well-known fact that every masonry wall is, to some extent, self-supporting.

Experiments made by Professor Ira O. Baker * showed that brick beams bonded as regular masonry had a modulus of rupture approximately equal to twice the tensile strength of the mortar, when built with ordinary care, and three times the strength of the mortar when built with great care.

Further, every architect and builder is aware of the fact that large openings can often be cut through masonry walls without the necessity for providing any extraneous support, and also that walls can often be supported over openings on timber beams that would be utterly inadequate to carry the load if the masonry possessed no transverse strength. It is also common knowledge that walls built of dry masonry are, to some extent, self-supporting.

In the case of an arch surmounted by a masonry wall, it would be possible to make an approximate computation of that part of the load remaining to be supported by the arch, but the result would be of very little service, as no indication would be afforded thereby as to the distribution of the pressure. The assumption adopted in practice that the whole weight of the masonry presses upon the arch certainly errs on the side of safety, but it must be admitted that the data so taken as the bases of computation are very inexact, and that subsequent mathematical calculations cannot give any true idea of the precise value or character of the strains involved.

Another hypothesis frequently adopted in arch design, is that the load presses only vertically upon the voussoirs, and in order to make this supposition in accordance with the facts, it is necessary to assume that the extradosal ends of the voussoirs are dressed with horizontal faces (as shown in Fig. 33, p. 113) for the purpose of receiving and transmitting the vertical pressure. Under these conditions, it is assumed that no horizontal forces have to be considered.

If, however, the extradosal ends of the voussoirs have oblique surfaces so that they constitute an extrados with a regular curve (as in Fig. 34, p. 113), they cannot transmit vertical pressure except so far as they may be enabled to do so by cohesion of the voussoirs, and the assumption that vertical pressure only is exerted does not accord with the fundamental principles of stability. It is evident that when the extrados forms a regular curve, there must be active horizontal components of the vertical pressure, and these would exist even if the superimposed masonry were divided by vertical joints extending from the top of the wall to the extrados.

For example, we have in Fig. 41 a semi-arch composed of four voussoirs on which is superimposed a wall with vertical joints. Considering the second voussoir from the top, the weight of the column of masonry, resting on the oblique extradosal face, is prevented from sliding by the resistance afforded along the vertical surface of the adjoining column of masonry. This resistance assists in opposing horizontal force transmitted by the preceding voussoir, and similar action takes place in other parts of the structure. Hence the outward thrust, instead of being resisted entirely by the abutment, is distributed over the whole structure.

Moreover, even if no active horizontal forces were developed, the resistance of the supported masonry—in the form of spandrel walls or spandrel backing—would materially affect the stability of the arch.

One of the most common effects, upon the removal of the centring, is that an arch tends to sink at the crown, and to rise at the haunches (as in Fig. 37, p. 141). Therefore, the passive resistance of the spandrel masonry is of material assistance in preventing this tendency, the efficiency of the resistance depending upon the quality of the masonry and increasing with the deformation of the arch. Nevertheless, it is extremely difficult, if not impossible, to form any reliable estimate of the horizontal resistance afforded by the spandrel masonry.

Another assumption usually made in computations is that the arch ring supports the masonry above it. This assumption is not correct, for the whole of the masonry from the extranos to the top of the supported wall, or walls, acts more or less as an arch. In fact, it is almost invariably the case that some part of the masonry enters into the constitution of the *real* arch, the form of which frequently differs very considerably from that of the *apparent* arch suggested by the ring of voussoirs.

The foregoing considerations point very clearly to the difficulties attending the application of purely mathematical theories of the arch to actual practice.

Again, if an arch has to support a mass of earth, it is impossible to determine with any accuracy the amount and the direction of the earth pressure. The action is similiar to that prevailing in the case of the earth held up by a retaining wall. It is known that earth has a tendency to break away and to slide down an inclined and curved surface, the force tending to produce this effect being the weight of the earth, and the forces tending to prevent it being friction and cohesion along the inclined surface. Consequently, the horizontal pressure exerted against a retaining wall depends directly upon the form of the surface down which the earth tends to slide. Similarly, the vertical pressure of the earth supported by an arch depends upon the form of the inclined surface down which the earth tends to slide.

If the constants of weight, friction, and cohesion could be definitely ascertained, the problem would be comparatively simple. As a matter of fact, however, there is a remarkable

* "The Technograph," University of Illinois, 1892–3. No. 7, pp. 29–37.

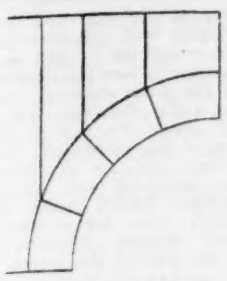

Fig. 41.

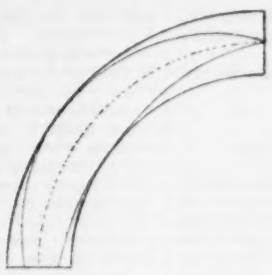

Fig. 42.

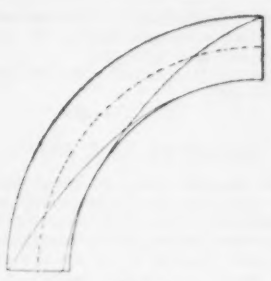

Fig. 43.

lack of data with regard to the actual action and effect of earthwork under circumstances such as those to which we refer. Reliance has been placed very largely upon theoretical investigations, which, unsupported by the results of practical experiments, are of comparatively small value. It is well known, however, that the whole weight of the earth super-imposed upon an arch is not carried by the arch, and in practice this fact is always recognised.

The assumption is generally made in connexion with the theory of the masonry arch that earth pressure is entirely vertical. This hypothesis is not correct, for the pressure of the earth gives rise to horizontal forces. Referring to Fig. 35, it will be seen at a glance that horizontal forces applied to the extrados must have the effect of adding to the stability of an arched structure, such as that shown in the diagram. It is also evident that for a given position and intensity of thrust the line of resistance must approach more closely to the extrados when the external forces are vertical than when such forces are inclined. Bearing these points in mind, we are brought to the conclusion that, although it is incorrect to regard the pressure of the earth as a wholly vertical pressure, the error operates in the direction of safety.

The determination of the external forces acting upon an arch is a matter quite apart from the mathematical theory of the arch, although, as we remarked at the beginning of this article, the position of the line of resistance cannot be defined unless the external forces are fully known. That they cannot be known with any close approach to accuracy has already been demonstrated, but for our present purpose it will be sufficient to assume that they have been actually determined.

Turning again to Fig. 35, we may point out that every variation of the value of the horizontal force or thrust, Q, involves a corresponding variation of the line of resistance. For instance, if the force Q were increased, the point *b*—at which R_1 intersects the joint between the voussoirs C and D—would be shifted along the line of the joint towards the extrados of the arch. Similarly, the points *c*, *d*, and *e* would find new positions along the joints between the other voussoirs, and nearer to the extrados.

If the force Q were increased to a sufficient extent, the line of pressure would pass through the outer extremity of the bottom joint of the voussoir A, or through the outer extremity of the joint between the voussoirs A and B; and the arch would then be on the point of failing by rotation about the outer edge of one of these joints. As a general rule the line of pressure would pass through the outer extremity of the bottom joint of A, but this would depend upon the dimensions of the arch and upon the values and directions of the forces P_1, P_2, and P_3. The value of Q here implied is manifestly the maximum limit for thrust, at the point *a*, consistent with safety against failure by rotation, and the corresponding line of resistance is the line of resistance for the maximum limit of thrust at the point *a*.

Again, if the force Q were progressively decreased, the line of resistance would gradually approach and ultimately intersect the intrados, and the arch would be on the point of failing by rotation about the inner edge of some joint in the intrados. The value of Q here implied clearly represents the minimum limit for thrust, at the point *a*, consistent with safety against failure by rotation, and the corresponding line of resistance is the line of resistance for the minimum limit of thrust at the point *a*.

Fig. 42 indicates lines of resistance for maximum and minimum thrust at the point *a* of the semi-arch there represented.

We will now consider another aspect of the case, and assume that the position of the point of application of the horizontal force Q is progressively lowered, and that the intensity of the force is simultaneously increased. A line of resistance may thus be obtained having one point in common with the intrados, and this is the line of resistance for maximum thrust at the joint of the crown, as indicated by the lowest curve in Fig. 43.

Next we will assume that the position of the point of application of the horizontal force Q is progressively decreased. A line of resistance may thereby be obtained, having one point in common with the extrados, and this is the line of resistance for minimum thrust at the crown joint, as indicated by the highest curve in Fig. 43.

Each fresh direction of the force Q results in a new line of resistance, and every different value of the various factors here involved, and every different combination of the values has the effect of giving a correspondingly different position for the line of resistance. Consequently the number of possible lines of resistance is infinite, and the problem for solution is to decide which line is the proper one for adoption.

The solution is by no means easy of attainment, as there are so many unknown quantities, for determining the values of which no means are available. With the object of overcoming the difficulties presented, various hypotheses have been formulated with the object of rendering possible a solution of the problem.

Among the hypotheses proposed one that is based on the principle of least thrust at the crown has probably met with more general approval than any other. According to this theory the true line of resistance is that for which the corresponding thrust at the crown is of the minimum value consistent with equilibrium. This assumption implies that the thrust at the crown is a passive force called into play by the external forces acting upon the arch, and further, that as its intensity need be no greater than that required for the maintenance of a condition of stability, the thrust must be the least possible consistent with equilibrium.

Although this hypothesis does not by itself delimit the position of the line of resistance, it furnishes means by which the line of resistance corresponding with a minimum thrust can be determined, if the external forces are fully known, and if the direction of the thrust is assumed.

ROYAL COMMISSION ON LONDON LOCOMOTION.

AT the sitting of this Commission, on Thursday last week, Mr. C. S. Meik, M.Inst.C.E., gave evidence. He said that his evidence had been prepared in conjunction with Mr. Walter Beer. The London traffic problem might be divided into two heads—relief of congestion of vehicular traffic, and the transport of passengers between the outskirts and the central business area, and through that area. The improvement of vehicular traffic could only be effected by means of new streets. He considered that the provision of two great arterial thoroughfares, running respectively from north to south and from east to west, was of the first importance. Witness then handed in plans and sections of the proposed thoroughfares, which he termed "main avenues," and described them at some length. New thoroughfares were preferable to widenings. The great thoroughfares ought to run right through London, should be capable of extension, and should be made to tap, as far as possible, the large railway termini, and other congested centres. In the construction of the roads special provision should be made for through traffic, and, in particular, for motor traffic. It was absolutely necessary that the part of such roads for through traffic should not cross important thoroughfares on the level, but nearly all cross streets might be connected with the roads either on a lower or an upper deck. Except by steps for foot passengers, it would be, as a rule, unnecessary and too costly to connect directly the upper deck of the new roads with any but the chief cross roads. Where the principal cross streets were far apart secondary streets might be so connected. With regard to motor traffic, he considered that a road specially for it was necessary, not only on account of the increasing number of privately owned cars, but also because of the strong probability that before long motor omnibuses would displace the horsed vehicles. While it was desirable that motor vehicles driven at a moderate pace should use the main road, it was necessary that an entirely distinct road should be provided for high-speed motor-cars, both on account of facility of movement and the preventing of accidents to foot passengers. The new roads to which he had referred should be of two types—"main avenues" and "first-class roads." The avenues should not be less than 160 ft. wide and the first-class roads 100 ft. The main north and south avenue would commence in the vicinity of Enfield and terminate between Croydon and Wallington. It would cross the Thames between Blackfriars and Waterloo Bridges, and would make a connexion with the east to west avenue between Rosebery-avenue and Pentonville-road. It would afford means of access to all the central parts of London for the large populations which would grow up in the vicinity of the L.C.C. building areas at Tottenham in the north and at Norbury in the south, areas which were expected to accommodate 40,000 and 60,000 people respectively. Traffic would be drawn from all the northern railway termini by means of the main west to east avenue, and from Victoria, London Bridge, and Bricklayer's Arms stations by means of first-class roads. Waterloo Station would also be tapped by means of a new embankment on the south side of the river from Waterloo Bridge to Blackfriars. The main west to east avenue would commence in the vicinity of Osterley Park, near Hounslow, and terminate to the east of Barking. Paddington, Euston, and the other large railway termini would be tapped, and the road would pass close to the East and West India Docks. A new cross road could be made to connect the Tower Bridge with Vauxhall Bridge. Referring to the proposed embankment, he said that it should be made with two decks, the upper for road traffic and the lower for the wharves. The upper deck would also be useful in providing a terminus for the tramways along Blackfriars and Waterloo Bridge roads. Considerable difficulty had been experienced in laying out the lines of the proposed avenues owing to the high-level railways crossing the routes. Where possible, the roads would be taken under the railways. Railway or tramway communication was obviously necessary along any new main roads, and the proposed avenues would permit of the construction on the upper deck of tramways, either upon the conduit or upon the overhead system. The first-class roads would also permit of the construction of tramways, and would, as a rule, be single-decked roads, having no higher gradient than 1 in 30. Turning to the question of railways in connexion with the new roads, he said that the only types of railway which could be constructed were suspended railways, shallow subway railways, or tubes. He described at some length the details of the three types, and said with regard to suspended railways that there would be less danger from fire in their case, since the motors and electrical conductors would be above the bodies of the carriages. On the score of carrying capacity, all three types could be made equal, but, in the case of tubes, an increased width of carriage would entail a proportionately larger cost than the other systems. The platforms of a suspended railway would be from 16 ft. to 18 ft. above the level of the upper deck of the main avenue, which deck would carry the whole of the pedestrian traffic. A shallow subway platform would be at least 37 ft. below the level of the upper deck, and in the case of tubes the platform would be at a minimum depth of 70 ft. With a shallow subway lifts would be desirable for that part of the traffic arising from the new avenue, and with a suspended railway for that part arising from cross streets; but those lifts would be less costly than the lifts necessary for tubes. Witness then proceeded to deal with the cost of construction of the three types of railway. A suspended railway would cost 75,000*l.* per mile; a shallow subway 250,000*l.*, and a tube 350,000*l.* In the case of a new main avenue, the cost for the foundations of a suspended railway would be small, and he had not included them in his estimate. Shallow subways and tubes, said witness, had the advantage of being out of sight, and he did not consider that a suspended railway was ugly, and it would not interfere with light and air. He then put in tables showing the estimated cost of the proposed avenues. The figures with regard to the cost of the Thames embankment had not been arrived at. With regard to the avenues, the acquisition of the necessary land and buildings would, he estimated, take a period of ten years,

and the resales of surplus land a period of fifteen years. In the case of the north to south avenue, the cost of acquiring the necessary property was estimated at 31,343,000*l.*; recoupment would amount to 36,789,000*l.*; the works would cost 10,020,000*l.*, so that the net cost of property and works would be 4,574,000*l.* The figures in the case of the east to west avenue were:—Property, 39,843,000*l.*; recoupment, 33,801,000*l.*; works, 10,695,000*l.*; making the net cost, 16,737,000*l.* The figures for the north to south avenue included the whole cost and recoupment of the property at the junction of the two avenues, but the cost of the works there was divided between the east to west avenue. Witness then proceeded to deal with the cost of the tramways and railways, and the revenue to be expected, and the fares to be charged.

At the sitting of the Commission on Friday last week evidence was given by Sir R. Littler, K.C., Chairman of the Middlesex County Council, who referred to the heavy expense the Council was put to in maintaining roads which were worn out, not by local traffic, but by the traffic passing from London to counties beyond. He considered that a series of through main roads should be constructed through the county at the national expense, to provide for the necessary through traffic. Witness dealt at length with the merits and disadvantages of proceeding before the Light Railway Commission, and expressed a strong opinion that all schemes should go before Parliament, which was by far the most satisfactory tribunal. Under the Light Railway Commission the Lands Clauses Act came into operation, and if a promoter wanted to widen a road he was bound to take the whole of a house, or building, or manufactory if the owner wished to sell the whole. This he considered a hardship to the promoter. In cross-examination by Sir John Wolfe Barry witness said he was strongly of opinion that any new great thoroughfares should be carried out by the State.

Mr. J. E. Waller, M.Inst.C.E., who has been connected with many tramway enterprises as consulting engineer, considered that the construction of tramways must play a considerable part in solving the problem of London traffic, and thought a comprehensive system of tramways could be constructed in London without adding to the congestion of the streets. He believed that the only satisfactory way to deal with the tramway legislative problem, whether applied to London or the whole of the country, was the creation of a special tramway or street traffic board, probably forming a Government Department. This board might have the power to investigate and sanction all schemes brought before it, but there might be an appeal to Parliament.

METROPOLITAN ASYLUMS BOARD.

THE usual fortnightly meeting of the Managers of the Metropolitan Asylums District was held on Saturday last, Sir R. Hensley in the chair.

Leavesden Asylum.—On the recommendation of the Works Committee, the revised plans of proposed cottages for twenty-two married attendants at the Leavesden Asylum were approved and adopted.

South-Eastern Hospital: Electric Lighting.—The same Committee recommended, and it was agreed, to seal an agreement with the London Electric Supply Corporation, Limited, for the supply for five years of electric current to the South-Eastern Hospital and the adjoining ambulance station.

Southern Hospital.—The report of the Committee stated that among the plans relating to buildings at this hospital which were approved by the Local Government Board in September, 1901, were plans for a laundry building, erection of a boiler house, chimney stack, and coal stores, being provided for by the insertion in the contract of a provisional sum of 8,500*l.* The total cost of the group of buildings, including the laundry, was then estimated by the architect at 11,926*l.* The precise nature of the arrangements to be made for lighting and heating the hospital had not, however, been determined at the time. As the result of consultations which had taken place between Messrs. Treadwell and Martin, the architects, and Mr. Hatch, the engineer, the Committee now submitted an amended plan of the laundry buildings and boiler house, together with plans showing a disinfector house, destructor house, coal stores, electrical power house, engineers' and artificers' shops, and an independent chimney shaft, 120 ft. high. The total cost of those buildings was estimated by the architects to be 14,995*l.*, or 3,069*l.* over the amount provided in the contract for the laundry, boiler house, etc., as originally planned. The Committee pointed out, however, that against that extra there was a provision of 5,000*l.* in the contract for contingencies, and a further provision of 2,400*l.* for extra foundations. The revised plans were, on the recommendation of the Committee, approved and adopted.

Having transacted other business, the Board adjourned.

GENERAL BUILDING NEWS.

ST. JOHN'S CHURCH, WIMBORNE.—This building has just been reopened after works of alteration. The work now carried out consists of a new chancel 23 ft. long, which retains the original apsidal form at the end. The floor has been laid with marble mosaic flooring, polished, and has a white Sicilian marble step. An arch has been built in the north wall of the chancel from which access can be gained to the vestry. An oak dado has been carried round the wall of the chancel. In the former chancel there were three small lancet windows which were filled with stained glass, bearing figures of St. John, the Good Shepherd, and St. Luke. These three windows have been altered to form a three-light window in the east. Three small quatrefoil windows have been added above them to correspond. The new chancel is further lighted by windows on the south and north. These windows have been executed by Messrs. Heaton, Butler, and Bayne, of London. Beneath the east window has been erected a carved oak reredos. By the extension of the chancel accommodation will now be found therein for the choir. The choristers' benches, which are of carved oak, have been extended, and new clergy desks have been added. This work, as well as the reredos, has been carried out by Messrs. Whipple and Co., of Exeter and London. They have also framed the Commandments in oak to match the other woodwork, and these have been placed each side of the east window. The organ chamber has been built on the south side of the chancel, and contains arches opening into the chancel and south transept. The floor of the organ chamber is of wood blocks, and the chamber contains a window and a separate entrance. This removal of the organ from the transept and the accommodation provided for the choir in the chancel will be the means of increasing the sittings for parishioners; but to gain still further accommodation the south transept has been lengthened by 6 ft. 6 in. About seventy more sittings will now be available. The new work has been carried out to match the stonework in the other portions of the building, whilst the heating and ventilation of the church have also received attention. The architect for the alterations and additions was Mr. W. J. Fletcher, who was architect of the church; the builder was Mr. C. H. Green.

CHURCH, ACCRINGTON.—A new church, dedicated to St. Mary Magdalen, has been erected at Accrington, from the designs of the architect, Mr. H. Ross, J.P. The new church is bounded on the east by Devonshire-street, on the north by Eccles-street, and on the west by Westwood-street. When completed, it will consist of a chancel, with organ chamber adjoining, nave, transepts, and aisles. A chapel is also provided for week-day services. The site on which it is built slopes considerably, and this has enabled the architect to place vestries under the chancel, and to make a parish room. When finished, the church will provide accommodation for 530 worshippers. The estimated cost was 5,260*l.*, with 1,770*l.* in addition for the tower and spire and 270*l.* for the boundary walls. In the portion now ready the chancel has been erected, and the nave carried a little to the left of the tower. The tower has been roofed at a height a little above the aisles. Accommodation is now provided for 312 worshippers. The next portion to be built will be the remainder of the nave and aisles, with a west gable, whilst the tower and spire will be taken in hand last of all. The height of the latter from vane to ground will be 158 ft. The church has been built of stone.

CASTLEDAWSON CHURCH, BELFAST.—The first of the opening services in this church after alterations and repairs was held on the 31st ult. Inside, all the old woodwork has been removed, and the church lengthened several feet; a new gallery, facing the pulpit, takes the place of the old one, and an open timber roof replaces the former plaster ceiling. The pews and all the woodwork are of pitch-pine, and varnished. A pulpit has been erected to the memory of the Rev. J. H. Fitzsimons, with a memorial window on either side and a circular window above. The heating apparatus has been installed by Messrs. Musgrave and Co., the high-pressure boiler system being adopted. The contractors for the work were Messrs. M'Dowel, Leathem, and Fraser, Belfast, under the superintendence of the architect, Mr. Thomas Houston, Kingscourt, Belfast.

WESLEYAN CHURCH, SUNDERLAND.—A new church and schools have been erected in Chester-road by the Wesleyans of the Durham-road Circuit, Sunderland. The new church, schools, and lecture rooms, etc., occupy a position at the corner of Ewesley-road and Chester-road. The church will accommodate 600 worshippers. It is cruciform in plan, and is entered by vestibules which face the Chester-road. To the left of the main entrance rises a tower, which contains the staircase leading to a gallery running across the end of the church, over the front of the vestibules. The seats, choir stalls, rostrum, etc., are of selected pitch-pine, and the windows are glazed throughout with cathedral leaded lights. At the rear of the church there are a school, ministers' vestry, and infants' schoolroom, while on the site to the left of the school is a two-story building, containing lecture hall, ladies' parlour, vestries, kitchen, lavatories, and cloak room. The buildings are faced with the best Ruabon bricks (Edwards), and the front of the church has Denwick stone dressings and tracery windows. The whole of the premises are lighted by electricity from the Corporation mains. The architect for the work was Mr. J. Jameson Green, Liverpool; contractor, Mr. J. W. White, Sunderland; and clerk of works, Mr. W. A. Lowry, Liverpool.

CHURCH AT HENDY, CARMARTHENSHIRE.—The Bishop of St. David's recently dedicated the new Church of St. David, at Hendy. The new building, which is in the Early Decorated style, has been erected on a site given by Sir W. R. Clayton. The estimated cost of the structure is 2,000*l.*, and there are 300 sittings. The architect was Mr. W. Griffiths, Llanelly.

WESLEYAN CHAPEL, LANDORE.—The Wesleyans of Swansea Circuit decided to build a new chapel upon the site of the old structure erected in 1860 at Landore. The designs of Mr. W. Beddoe Rees, architect, Cardiff, were accepted, and building operations have just been commenced. The builders are Messrs. J. and D. Jones, Swansea.

BAPTIST CHAPEL, CAMBRIDGE.—The Baptists of Cambridge have just erected a new chapel, at a cost of 9,000*l.* The building is on the site of the old chapel, and is of whole flint facings set in cement, with white stone dressings, the windows, which are of the perpendicular Gothic style, being fitted with coloured glass. There is a tower, surmounted by a spirelet, at one corner of the street frontage. There is a gallery running along three sides of the edifice, and accommodation is provided for over 1,000 persons. The contractors were Messrs. Kerridge and Shaw, of Cambridge; and Messrs. G. and R. P. Baines, of London, were the architects.

NEW SCHOOLS, OXFORD.—The foundation-stone of the new schools of St. Thomas, Oxford, was laid on the 26th ult. The buildings are of red brick, stone, rough cast, and tiles, and comprise two halls, class-rooms, teachers' rooms, and cloak-rooms, accommodating 400 children. The builder is Mr. J. Wooldridge, of Oxford, and the architect Mr. Philip A. Robson, of Westminster.

HIGHER GRADE SCHOOL, CANTON, CARDIFF.—A new higher grade school is to be erected at Canton. Competitive plans were invited from the architects practising in Cardiff, and over thirty firms competed, and the School Board have decided to accept the plans of Messrs. James and Morgan. The new school will be built on a portion of the site at present occupied by the Canton Cattle Market, and the school entrances will be in Market-road. The plans show that the class-rooms, as far as possible, have been grouped around the central hall. The walls are to be built with local stock bricks, faced externally with suitable red pressed bricks. The structure is expected to cost about 20,000*l.*

SCHOOL, LOWESTOFT.—The new Council School, which has been erected at a cost of between 9,000*l.* and 10,000*l.*, on Roman Hill, Lowestoft, has just been opened. The new school has accommodation for 820 children, 260 each of boys and girls, and 300 infants. The builders were Messrs. Hawes and Son, of Norwich; and Mr. Rushworth, of Croydon, was the architect. The contract price was 9,200*l.* The schools are lighted by electricity.

SCHOOL, PONTYPRIDD.—Mr. James Roberts, J.P., Chairman of the Pontypridd Education Committee, formally opened the new infant school at the Trallwn recently. The building has been erected, at a cost of 3,848*l.*, by Mr. E. B. Smith-Jones, Barry, from plans drawn by Mr. A. O. Evans, Architect to the Education Committee, Pontypridd. The school provides accommodation for 400 infants. It is built on the central hall principle, and has eight class-rooms. The central hall is lighted by sky-lights running the whole length of the roof, and all the class-rooms open directly out of it; it has wood-block floors. The structure is of native stone, with Cattybrook brick dressing.

SYNAGOGUE, WOLVERHAMPTON.—The Hebrew community in Wolverhampton have just erected a new building, the material used being pressed bricks, with stone dressings. It is estimated that the cost of the building will be about 1,000*l.* The architect is Mr. Beck, Mr. Gough was the builder, and the decorating

and painting was undertaken by Mr. G. Greenstone.

CREMATORIUM, LEEDS.—A crematorium is to be built, at an estimated cost of 2,500*l.*, in the grounds of Lawnswood Cemetery at Adel, Leeds. The plans of the new structure, which have been prepared by Mr. W. S. Braithwaite, architect, Leeds, show that the crematorium is to be built on the south side of the present Nonconformist chapel. It will be 34 ft. long and 20 ft. in width, inside measurement. The building will be of stone, with a tiled roof, and the chimney is to be encased in a tower. The furnace will be on a French principle, and the heating will be gas instead of coke. Mr. Eugene A. Fradet, of Paris, is the inventor, whose system is in use at Rouen, Rheims, and other Continental centres.

NEW OFFICES, NORWICH.—The directors of the Norwich and London Accident Insurance Association have purchased a large block of property adjoining their head office in Norwich, and have instructed Messrs. Geo. J. and F. W. Skipper, architects, to prepare plans for an extensive scheme of enlargement.

ST. SILAS' SCHOOL, BLACKBURN.—The new schoolroom which has been added to St. Silas' School, Clematis-street, Blackburn, was opened recently. The new story, which is built over the old schools, measures 93 ft. by 33 ft., and, in addition to being used as a school, it will be utilised for assembly purposes, being capable of accommodating 600 people. Glass sliding screens are utilised, thus forming five class-rooms, and here the education of the senior mixed department will be conducted, whilst the junior mixed and infant departments will be carried on on the ground floor. The alterations have necessitated the rearrangement of the ground floor portion. About 3,000*l.* has been spent, which not only covers the cost of the addition, but provides for new cloak-rooms, lavatories, etc., for the three departments. The buildings are heated on the low pressure hot water system, with radiators at the openings for warming the incoming air, whilst the vitiated air is extracted by means of electric fans fixed in the roof. The architects are Messrs. Joseph Smith and Walter Stirrup, and the contract was carried out by Mr. John Boland.

SANITARY AND ENGINEERING NEWS.

PARKES MUSEUM.—It may interest our readers to know that, with the approval of the Council of the Sanitary Institute, Mr. Scott-Moncrieff's sewage testing apparatus can now be seen in the Parkes Museum. The apparatus has been designed for the purpose of obtaining exact information upon which to base bacterial sewage disposal schemes, particularly as to (1) the depth of filter required to produce the necessary standard of purity in the effluent; (2) the quantity of air necessary for the life processes of the organisms in the filter; (3) the correct rate of flow per unit of filter-bed surface in order to obtain the best results; and (4) the best period of rest between each discharge to prevent gelatinous growths in the filtering material.

THE SANITARY INSTITUTE.—The following officers will preside over meetings of the next Congress of the Sanitary Institute, to be held in Glasgow from July 25-30:—*President of the Congress*, the Right Hon. Lord Blythswood. Section I.—*Sanitary Science and Preventive Medicine:* Professor J. Glaister, M.D. Section II.—*Engineering and Architecture:* Professor H. Robinson, M.Inst.C.E. Section III.—*Physics, Chemistry, and Biology:* Professor Clowes, D.Sc. *Conferences.*—Of Municipal Representatives: Councillor W. F. Anderson. On Industrial Hygiene: Councillor J. Steele. Of Medical Officers of Health: Sir Chas. A. Cameron, C.B. Of Engineers and Surveyors to County and other Sanitary Authorities: Mr. Wm. Weaver, M.Inst.C.E. Of Veterinary Inspectors: Professor James McCall, F.R.C.V.S. Of Sanitary Inspectors: Mr. T. F. Strutt. Of Women on Hygiene: The Duchess of Montrose. On Hygiene of School Life: Professor J. Edgar, M.A. The lecture to Congress will be given by Sir Richard Douglas Powell, Bart., on "The Prevention of Consumption."

WATER ADMINISTRATION AND PLUMBERS' WORK.—An influential conference of water authorities, architects, and plumbers, met in November last, in order to discuss various matters connected with the administration and distribution of water; and a joint Committee on Water Regulations was appointed to undertake the task of systematising the methods of water administration in the United Kingdom—a task which the enormous growth of urban population in recent years, and the consequent possible inadequacy of the national sources of water supply, has rendered vitally necessary at the present time. Sixteen of the chief water authorities and companies, supplying populations of 100,000 and upwards, the British Association of Waterworks Engineers, the Royal Institute of British Architects, and the Worshipful Company of Plumbers are among the bodies represented on the Committee. Of the problems of water administration, the Committee will only take cognisance of those connected with the distribution of water for domestic and other purposes. The subject thus defined naturally divides itself under the three main heads of (*a*) by-laws and regulations, (*b*) fittings and materials, and (*c*) workmanship, with each of which divisions a sub-committee has been appointed to deal.

FOREIGN.

FRANCE.—M. Carolus Duran has been re-elected President of the Société Nationale des Beaux-Arts (New Salon); MM. Roll, Rodin, Waltner, and Besnard are Vice-Presidents, and M. Dubufe Treasurer.——At the horticultural gardens at Boulogne-sur-Seine, a new free school of drawing and modelling from plants has been established under the title of "Académie des Arts de la Fleur et de la Plante." It is directed by several painters and sculptors of note, and lectures on art and æsthetic are given to the students.——The Government has decided to accept the gift offered to the State by M. Osiris of the château of Malmaison.——M. Guyon has been appointed architect for the erection of the artisans' dwellings to be built on the site of the old prison of La Roquette.——Important works are to be undertaken at Brest for the sanitation of the town, which will involve the demolition of a portion of the old fortifications.——The Pont de Grenelle is to be widened by three mètres by corbelled out additions in iron on each side of the existing bridge.——M. Camille Bernard, Professor at the manufactory of Sèvres, has opened in the Rue de l'Odéon an atelier of architecture, preparatory to the course of the Ecole des Beaux-Arts.——A committee has been formed to erect a statue to Jeanne Darc at Beauvais.——The jury on the competition for a Hôtel de Ville at Troyes has selected, to take part in the second competition, MM. Balley and Monceau, Legrand, Tronchet, Robert and Hameau, Duval and Robida, and Hocherau and Brun.——The fine building of the College of Jesuits at Bordeaux has been entirely destroyed by fire.——M. Amédée Perrière, architect, of Paris (a former pupil of Viollet-le-Duc), has died at the age of 60. He was architect of the chapel of the Pères Assumptionistes in Rue François I., Paris.——The death is announced also of M. André Bellemain, architect, of Lyons, aged 52. He was given the cross of the Legion of Honour for his courageous conduct during the war of 1870.

GERMANY.—The Heinemann Gallery at Munich has been opened. The building was designed by Herr Emanuel Seidl, in Renaissance style. The exhibition rooms extend through two floors, and are lighted from the north and south, one gallery also having a top light.

AUSTRIA.—The cathedral at Brünn is to be restored according to the plans of Herr Kierstein, of Vienna. The towers are to be added to the cathedral, and the interior is to be considerably altered. The work will probably occupy four years.

SWITZERLAND.—The church at Münsingen has been considerably enlarged. The tower had become unsafe, and was replaced by a new one by the architect, Karl Indermühle. He has succeeded in retaining the simple character of the building, which is in keeping with its beautiful surroundings.——Two hundred and fifty names have already been entered for the International Congress for the Promotion of Draughtsmanship (Kongress zur Förderung des Zeichenunterrichtes), which is to take place in August at Berne.

SINGAPORE.—A large number of houses (about 700) to be used as shops or dwellings are in course of construction in the town and suburbs, and several European houses have been erected in the suburbs. At Sophia Hill "Carrington House," now known as "Adis Lodge," has been almost entirely rebuilt and the grounds laid out, at a cost of over 15,000*l.* Of business premises in course of construction the principal ones are those of Messrs. Kelly and Walsh, at Orchard-road, and Messrs. Whiteaway, Laidlaw, and Co., at the corner of Hill-street and Stamford-road, both on a large scale. The Opium and Spirits Farmers are building for their own use a three-story block of six houses, comprising offices and stores in Cecil-street. Messrs. Fraser and Neave have completed, and are now in occupation of, their aerated water works at Anson-road. These premises are probably the finest in the East, and are most conveniently situated. The Tanjong Pagar Dock Company have erected offices for their staff close to the docks, and have also completed several large warehouses to meet the continuously increasing demand for accommodation at the wharves; other improvements are being actively carried out on the company's property. The lease of the Hôtel de l'Europe has changed hands, and it is intended by the new lessees to pull down nearly the whole of the present buildings and to erect a new hotel.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS. Messrs. Pugin and Pugin, architects, have removed their London offices from Brook-green, Hammersmith, to 159, Kensington High-street, W.——Messrs. Hodkin and Jones, manufacturers of artificial stone, marble, etc. (Sheffield), have opened a London office at 63, Finsbury-pavement, E.C.

QUEEN VICTORIA MEMORIAL, BIRKENHEAD.—A memorial to the late Queen is to be erected in Hamilton-square Gardens. The memorial, which will stand upon a base of eight stone steps, will be 70 ft. high. The design is carried out on similar lines to the original Eleanor crosses, with the exception that in the second of the three stages the statues of Queen Eleanor have been omitted. The monument is an octagon, and consists of three parts, the lowest containing traceried panels and shields of arms, and an inscription giving the history of the memorial. Mr. E. Kirby, of Liverpool, is the architect.

SELL'S DIRECTORY OF TELEGRAPHIC ADDRESSES.—We have received the copy of this Directory for 1904, which contains every new telegraphic address, or alteration, registered at the Post Office up to December 31, and it contains the names of the chief 60,000 firms of the United Kingdom who have telegraphic addresses. It also contains a complete list of English consuls in foreign countries, classified under the towns in which they reside. Quarterly supplements are promised for giving additions and alterations, a special staff being maintained to take note of these.

MARKET, ETC., BUILDINGS, GAINSBOROUGH.—The Gainsborough Urban Council recently discussed the proposal to turn the whole block of buildings in the Gainsborough Market Place—which the Council have now acquired—into a covered market and Town Hall area. As to the form the buildings should take, it was at first suggested that lockup shops should be placed in the basement, but it was pointed out that much of the newly acquired space would have to go for street improvement. It was then suggested that a duplicate scheme should be prepared, showing the municipal buildings with and without shops, and Mr. Cooper advised consultation with the architects of the present Town Hall, Messrs. Brameld and Meek, of Manchester. Eventually the Markets and Highways Committees were appointed a joint committee to formulate the work and report to the Council.

MEMORIAL, STOKESAY.—A stained glass window and brass tablet have been placed in the Parish Church, Stokesay, in memory of Lieutenant Tredinnick, who was killed in the South African war. Both the brass tablet and the window were from the designs of Mr. Payne, Master of the Art School, Birmingham.

ELECTRIC LIGHT, TUNSTALL.—A special meeting of Tunstall Urban District Council was held on the 1st inst., Mr. H. Smallman, Chief Bailiff, presiding, to consider the question of an electric installation for the town. A letter was received from the Town Clerk of Burslem, stating that the question of supplying Tunstall with electricity had been before a committee of the Burslem Corporation, who had decided to recommend the Town Council to enter into an agreement with Tunstall on the following terms:—(1) The Tunstall District Council to agree to take not less than 50,000 units per annum for a period of not less than seven years, the price to be as follows: 2d. per unit up to 100,000 units, 1½d. per unit for each unit over 100,000 and up to 200,000 units, 1d. per unit for each unit over 200,000 units. (2) If the Tunstall switchboard is fixed at the central station in Burslem an extra charge for switchboard attendance at Burslem will be 75*l.* per annum. (3) Mr. Bremner will be allowed to act as electrical adviser to the Tunstall Council and to supervise the laying down of electric mains in Tunstall, on terms to be arranged by him, with the approval of the Burslem Committee. (4) The question of Mr. Bremner, or the electrical engineer for the time being, acting as electrical engineer for Tunstall, will be considered by the Burslem Council if the above terms are satisfactory to Tunstall. This offer was discussed at considerable length, and ultimately the following resolution was passed:—"That, provided Burslem is in a position, from a legal point of view, to carry out such an arrangement, this meeting is prepared to recommend the Council to enter into an approved agreement with the Burslem Corporation for supplying Tunstall with electricity in bulk on the terms contained in paragraph one of the letter of the Town Clerk of January 28, 1904, the details of clauses two, three, and

four to be further considered and discussed with the Corporation of Burslem."

Street Improvements, Liverpool.—An inquiry was held on the 4th inst. at the Liverpool Municipal Offices, by Mr. R. H. Bicknell, M.Inst.C.E., Inspector of the Local Government Board, in regard to a petition by the Corporation for a provisional order to put into force the power of the Land Clauses Act in regard to certain lands required for street widening and the construction of a new street; and, further, into an application to borrow 43,000*l.* for the purchase of the Calderstones Estate. Mr. Pierce, the Deputy Town Clerk, stated that the petition had reference to the widening of High-street, Wavertree, the widening and extension of Morley-street, the diversion and widening of Morley-lane, Kirkdale, and the construction of a new street between Allerton-road and Beech-lane. The improvements were urgently required in the interest of traffic, and the works in High-street were already in hand. The proposed new street would be across land belonging to the Marquis of Salisbury. It would follow for the most part the present footpath, and would be 800 yds. in length, with a uniform width of 60 ft.—The Inspector asked how it was proposed to accommodate the people who would be dispossessed.—Dr. Hope replied that a recent census showed that there were in the city 1,000 empty houses, the rent of which was 6s. a week or under.—The Inspector wished to know the number of suitable empty houses within a radius of a mile, or a mile and a half, of the proposed improvements.—Mr. Pierce said the information would be sent to the Inspector.—As to the second application, Mr. J. A. Brodie, City Engineer, said that three large estates in the neighbourhood were being developed, and a population of about 25,000 was springing up.

London Master Builders' Association Handbook.—This is a diary, combined with a great deal of important practical information bearing on the carrying out of building work. It includes a comparative statement of hours worked per week, and rate of wages per hour, in various branches of the building trade, in a number of towns in England; a key to the London Building Act, referring to the clauses which govern different building operations; Conciliation Board decisions, etc., etc.

North-West Durham Builders' Association.—The annual dinner of the members of this Association took place at the Railway Inn, Annfield Plain, recently, when about forty gentlemen were present. County Councillor Jos. Eltringham (Blackhill) occupied the chair, and Mr. Wm. Johnson (West Stanley) acted as Vice Chairman. Mr. Jos. Dunn (Kyo) discharged the secretarial duties.—Mr. Penman (Newcastle) proposed "Success to the North-West Durham Builders' Association," and this was replied to by the Chairman.—Mr. George Nicholson (Leadgate) gave "The Architects and Surveyors," and this was acknowledged by Mr. J. T. Trowsdale (Annfield Plain).—Mr. Morfue (Dipton) submitted "The Builders' Travellers," to which Messrs. Hutchinson and Hill responded.—The Vice-Chairman proposed "The Visitors," and Messrs. Hy. Dowse (Blackhill) and J. G. Ridley (Stanley) responded.

Asphalt Mines in Columbia.—Asphalt mines have been recently discovered, and are now being worked, in Columbia. Mr. Vice-Consul Dickson, considering there might be British houses desiring to do business in the article, has sent to the Foreign Office a letter giving some details. From this it appears that at the present time the company have one mine, or deposit, working near Chaparral, Tolima, from which they are shipping about 2,000 tons per year; of this, a little more than one-half goes to the United States, the balance to Germany. The asphaltum is of the hard variety, and it is almost impossible to tell the difference between it and Egyptian. The Columbia asphaltum is used entirely for the body of paints, and the making of fine varnish. It is shipped from the mines in sacks, and sells f.o.b. New York for 65 dollars (13*l.*) the short ton. The ocean freights are about 5 dollars 50c. (1*l.* 2s.) per ton.

Statues in York Minster.—Memorial statues of Archbishop John de Thoresby, William of Wickham, Canon of York, William de Skirlaw, Bishop of Durham, and Henry, third Baron Percy, were unveiled recently in York Minster. The new monuments have been placed in the Lady Chapel, and they have been executed by Messrs. Farmer and Brindley from the designs of Mr. G. F. Bodley, R.A.

War Memorial, Southwark.—A mural tablet, which has been erected in memory of Colonel Salmond and former members of the 1st Cadet Battalion of "The Queen's" who were killed in South Africa, was recently unveiled by Lord Methuen in St. Saviour's Church, Southwark. The tablet is of bronze, and has been designed by Mr. E. Hoole.

The Thames Steamboat Bill.—In the House of Commons on Tuesday, the London County Council's Thames Steamboat Service Bill passed its second reading. The Bill, which was presented by Mr. John Burns, provides for the expenditure of 280,000*l.* upon establishing a municipal penny per mile passenger service on the river by means of a fleet of thirty steamers.

Municipal and County Club.—At the house dinner of the Municipal and County Club, held on the 8th inst. at Whitehall-court, Sir Francis J. S. Hopwood, Permanent Secretary of the Board of Trade, was the guest of the evening. Mr. Laurence Gomme, Clerk of the London County Council, and President of the club, was in the chair, and among the members present were Sir Fortescue Flannery, M.P., Mr. Norval Helme, M.P., the Town Clerks of Camberwell, Guildford, Finchley, etc., etc. The dinner was followed by an entertainment.

Lifts for the Tube Railways.—The electric lifts for the whole of the Yerkes system of tube railways are to be supplied and fixed by the Otis Elevator Company. The contract comprises about 170 lifts, each capable of raising a load of 10,000 lb. (equivalent to about sixty-five passengers), at a speed of 200 ft. per minute, through shafts varying from 40 ft. to 180 ft. in depth. The underground stations will be fitted in most cases with four, and in some cases with six, lifts. The majority of the shafts will be 23 ft. in diameter; some, however, will be 30 ft. diameter; the small size shafts will each contain two lifts, the larger size three lifts each. The lifts will be electrically operated from the Chelsea generating station, from which electric power will be furnished for the three railways comprising the system, viz., the Baker-street and Waterloo, the Charing Cross, Euston, and Hampstead, and the Great Northern, Piccadilly, and Brompton railways. Precautions will be taken to insure the security of the public by the adoption of special safety appliances, and of non-flammable material throughout the mechanism and its accessories.

The St. Louis Exhibition.—There will undoubtedly be a very large gathering of engineers during the present year at the forthcoming Exhibition at St. Louis. The American Society of Mechanical Engineers have selected Chicago as the place for their spring meeting, having in view the advantages to be gained by holding the meeting in a city with ample accommodation for visitors, and within easy reach of the St. Louis Exhibition. Further, they have extended an invitation for the Institution of Mechanical Engineers to participate in the proceedings, with the result that the last-mentioned body have decided to hold their annual summer meeting in conjunction with that of the American Society at Chicago. The American Society of Civil Engineers have invited their British *confrères* to avail themselves of the facilities provided by the Society at the St. Louis Exhibition, and the head-quarters in the Liberal Arts Building will be a rendezvous for engineers from all parts of the world. A visit has also been arranged by the Institution of Electrical Engineers, who will attend the International Electrical Congress of St. Louis to be held in September next. All interested in electricity and its applications will be invited to accept membership in the Congress, and ample accommodation will be provided by the Exhibition authorities. It is to be regretted that St. Louis is so far from our shores, as many who would like o visit the Exhibition and to take a part in the scientific meetings will inevitably be debarred from so doing by lack of time or money.

Building Operations in Mexico.—In a report drawn up for the Foreign Office respecting the trade of Mexico, Mr. C. Biorklund, Clerk to His Majesty's Legation, mentions among the important articles in demand iron piping of all kinds. The value of these imports in 1902 amounted to 239,073*l.* Iron piping is used almost entirely in the sewerage system and water mains now being laid in several of the new quarters in the suburbs of Mexico city. The importation of iron beams for building purposes alone in 1902 amounted to 111,459*l.*, and as in modern construction they are taking the place of wooden beams (which in many cases were of cedar), this seems to be an article for which there will always be a demand. The buildings in the new quarters of the city are very different in construction to the old edifices in the heart of the town, which were erected more than 100 years ago, when labour was cheap, and when it consequently did not make much difference if they took a longer time to build. The material used in the walls, which were in many instances over 4 ft. in thickness, was principally "tezontle," a stone of volcanic formation, and very hard; the beams were of well seasoned wood, cedar being given the preference on account of its durability, and the space between the floors of one story and the beams beneath was filled in with earth, the depth being in nearly all cases over a foot, a process which not only deadened the sound, but, in case of fire, which was very rare, served to extinguish, or, at least to isolate, it. The modern buildings are run up very quickly, "tepetate," a kind of concrete of clay and sandstone, said to be peculiar to Mexico, and bricks, being the principal components of the walls, which are seldom more than 3 ft. thick. A great deal of brick is now brought from Saltillo, Monterey, and Cuernavaca, where large and improved brick factories have been erected, the bricks being of a smoother surface than those made in the immediate vicinity of the city of Mexico. Iron beams and corrugated iron sheets form the divisions between the floors, and many of the new houses have mansard roofs, instead of the old-fashioned flat brick roofs. Mr. Biorklund adds, that considering the amount of buildings that are being erected, not only in and around the city of Mexico, but also in all parts of the Republic, it is surprising what a lack there is of good finishings, such as bolts and locks, window fastenings, etc. What is obtainable is either of American or German make, and usually of a very inferior quality, with the result that they do not last any time. The hardware business, not only in Mexico city, but also in all the large towns in the different states of the Republic, is in the hands of German firms, connected more or less directly with the four principal firms in Mexico. There are now only five hardware stores of any importance in the city, four of them being the firms just mentioned, and the other a Spanish house. There was, also, until quite recently, a large Mexican firm dealing in hardware, with a fair assortment of goods, many of them of British manufacture, but the whole of the business and stock was bought up by one of the existing German firms.

CAPITAL AND LABOUR.

Newcastle-on-Tyne.—A meeting of the Conciliation Board, formed seven years ago, to settle the dispute between the bricklayers and plasterers on Tyneside as to the demarcation of their respective work was held on Tuesday last week at the offices of Messrs. Oliver, Leeson, and Wood, Newcastle, to consider a question raised by the plasterers as to an alleged infringement of the schedule agreed upon between the two trades in relation to some recent work done in the neighbourhood. Mr. J. W. Dyson, Chairman of the Board, presided. Mr. R. J. Leeson represented the architects, Mr. Walter Lowrey and Mr. Weir the master builders, Mr. McLeod and Mr. Carron the plasterers, and Mr. Hope and Mr. Drummond the bricklayers. After considerable discussion and admission on both sides that there was no intention to create trouble an amicable settlement was arranged, thus avoiding a disturbance in the building trade.

Tees-side District.—The master builders in the Tees-side district, comprising the Hartlepools, Stockton, Thornaby, and Middlesbrough, have given three months' notice to reduce the bricklayers', joiners', and plasterers' wages one penny per hour, the labourers a halfpenny per hour, and the plasterers' labourers one farthing per hour.

Legal.

BUILDING OWNER AND ARCHITECT.

In the Court of Appeal, composed of the Master of the Rolls and Lords Justices Romer and Mathew, on the 10th inst., Mr. Hawtin applied on behalf of the defendant in the case of Taylor *v.* Burrows for leave to appeal from a decision of a Divisional Court of King's Bench. The learned counsel said that the appeal to the Divisional Court from the award of the arbitrator, or special referee, raised a question as to what constituted misconduct on the part of the referee. The action was brought by the plaintiff against the defendant for the balance of an amount alleged to be due under a contract to build some flats. The defendant employed an architect, and, acting upon the advice of the architect, defendant refused to pay the amount claimed in the action—85*l.*—and, furthermore, he was advised by the architect that he was entitled to claim damages from the plaintiff to the extent of some 500*l.*, for breach of contract, in so far as the plaintiff had not carried out his contract so far as it related to measurements, with the result that thirty-two rooms in the flats were 2 ft. less in dimensions than they ought to have been. On that ground the defendant refused to pay the amount, and that action was started. Afterwards both parties agreed to have the architect as referee in the matter. The first complaint the defendant had to make against the architect was that he had allowed the plaintiff to amend his claim from 85*l.* to 475*l.* Afterwards the arbitrator issued his award.

Lord Justice Mathew: Is this action to enforce the award?

Mr. Hawtin: No, my client appealed to the

Divisional Court from the award of the arbitrator on the ground of his misconduct, and the Divisional Court dismissed the appeal, but without costs, against the defendant. The other complaint the defendant has to make is that he would never have contested the action had it not been for the advice of the architect.

In answer to the Master of the Rolls the learned counsel said he did not appear in the case in the Divisional Court, but he understood that the learned counsel then appearing had not asked for leave to appeal.

The Master of the Rolls said that in those circumstances this Court could not interfere. Counsel had better apply to the Divisional Court for leave to appeal.

Mr. Hawtin replied that it was difficult to do so, as the same judges who constituted the Divisional Court when the case was heard were not sitting together now. He asked, as that day was the last in which to enter an appeal, that their Lordships would grant an extension of the time within which the defendant could enter the appeal.

The Master of the Rolls said that this Court could not interfere.

The application was accordingly dismissed.

SOUTH NORWOOD BUILDING DISPUTE.

In the Chancery Division on the 4th inst. Mr. Justice Buckley concluded the hearing of the case of Sabine *v.* Brind and Westbrook, an action by the plaintiff, Mr. W. G. Sabine, against the defendants, Mrs. M. R. Brind and John Westbrook, for the removal of certain houses erected by the last-named defendant on a building estate at South Norwood, in alleged breach of a covenant, or the reconstruction of the houses in such a manner as to comply with the terms of the covenant. The plaintiff also claimed an injunction to restrain defendants from erecting any buildings other than dwelling-houses. There was also a claim for damages.

The plaintiff's case was that he had purchased certain freehold land, forming part of a building estate at South Norwood, the same being conveyed to him by an indenture which contained a covenant that he would not erect any buildings on the land other than private dwelling-houses, which should not be of less value than the houses Nos. 6 and 8, Beulah-road East, Thornton Heath. The plaintiff erected some houses known as St. Helen's, which he said were superior to those in the Beulah-road, and subsequently contracted with Mrs. Brind to sell to her a portion of the land purchased by him, Mrs. Brind covenanting with him that the houses she built on the land should not be of less value than those known as St. Helen's. The plaintiff's case was that Mrs. Brind entered into a contract with the defendant Westbrook, a builder, to erect a number of houses on her land, and Westbrook, it was alleged, with notice of the covenants, had built eight houses, which, it was said, were smaller, and of less value than those known as St. Helen's. The plaintiff alleged that this depreciated his property, and brought the present action.

Mrs. Brind, by her defence, denied that the houses failed to comply with the terms of the covenant, and said that the plaintiff was aware of the erection of the houses, his surveyor having constantly seen them and made no complaint.

The defendant Westbrook, by his defence, denied that he had entered into any agreement with Mrs. Brind and that his indenture contained any covenant as suggested by the plaintiff. He also denied having notice of the covenant entered into between the plaintiff and Mrs. Brind. Westbrook also said that the houses he built on the land in question were of the same value as the plaintiff's houses, and that plaintiff knew of their erection. Westbrook further said that his agreement with Mrs. Brind had come to an end, and that he did not intend to build further.

After hearing a great deal of expert evidence as to the value of the respective houses,

His Lordship, in giving judgment, said that he should regard the houses in question as houses built for the purpose of sale, and that the intention of the covenant was that the defendants' houses should be, from a builder's point of view, of the same cost as the houses previously built on the estate. He thought it had been shown that the cost price of the defendants' houses was less than that of the plaintiff's, and their annual value was undoubtedly smaller. He thought that the covenant had not been performed, and he found that the plans for the defendants' houses had not been passed and approved by the plaintiff. In these circumstances, he granted the injunction asked for, and made an order against the defendant Brind for 200*l.* damages and the costs of the action. His Lordship explained that he made the order against the defendant Brind alone, because at the commencement of the case plaintiff's counsel agreed that the defendant Westbrook should be withdrawn from the case because no order was asked against him, but he was to have no costs.

Order accordingly.

Mr. Astbury, K.C., and Mr. Church appeared for the plaintiff; and Mr. Buckmaster, K.C., and Mr. George Hart for the defendants.

THE WIDENING OF PICCADILLY—ACTION IN THE CHANCERY DIVISION.

The cases of Reynolds *v.* the Building and Vendor Company and the Mayor, etc., of Westminster, and Roberson *v.* the same defendants, came before Mr. Justice Farwell, in the Chancery Division this week.

These actions were tried together, the points involved being somewhat similar. In the first case the plaintiff, Mr. Walter Reynolds, an antique dealer, etc., of Walsingham House, Piccadilly, sought an injunction against the defendants to restrain them from proceeding further with certain notices to treat, claiming to compulsorily acquire from him his interest in his shop and premises, situate at No. 3, Walsingham House, which he held under a lease, and for a declaration that the said notice to treat was inoperative and invalid, and that the same be set aside. The plaintiff, in his statement of claim, stated that the defendants only required a small portion of his premises, and that the remainder was of sufficient size for him to carry on his business, and therefore their notice was inoperative and invaljd. The plaintiffs Roberson and Co. claimed an injunction to restrain the defendants from proceeding upon a notice of October 20, 1903, requiring them to treat for the sale by them to the defendants of the plaintiffs' premises at No. 154, Piccadilly. In the alternative these plaintiffs asked if the defendants were entitled to proceed under the notice for an injunction to restrain the defendants from selling any part of the premises to any other persons before the same should have been offered to plaintiffs, pursuant to the provisions of section 90 of the statute, 57 Geo. III., cap. 29.

The case of these plaintiffs was that they held the premises under a lease dated December, 1896, made between Lord Walsingham and Mr. Chas. Park, trading as Roberson and Co., which comprised the ground floor and basement of Walsingham House, for a period of twenty-one years. The premises were known as No. 154, Piccadilly, and had a frontage of 17 ft., and a depth of 41 ft., with a basement. From 1896 to the time of his death Chas. Park carried on the business of an artists' colourman, and upon his death the plaintiffs succeeded to the business. The premises were of exceptional value to the plaintiffs for the purposes of their business. Walsingham House and the adjoining premises, the Bath Hotel, had been pulled down. The defendant company, the Building and Vendor Company, had acquired the freehold of the premises known as Walsingham House, including the portion leased to the plaintiffs. On October 20, 1903, plaintiffs were served with a statutory notice by the Surveyor of the Westminster Council to sell the whole of their interest in the premises to the Council, as the same were needed to widen the street. The Council intended to take off 15 ft. from the frontage. The widening had been arranged between the London County Council, the Westminster Council, and the defendant company. The plaintiffs alleged that the Westminster Council only intended to use 15 ft. of the land and to surrender the remaining portion of the site to the Building Company. The plaintiffs contended that the remainder would have afforded an excellent site for the continuing of their business. They further contended that the notice under the Act was not given in the *bonâ fide* exercise of the powers conferred by the statute, having regard to the fact that the whole of the plaintiffs' premises were not required for the purpose of widening Piccadilly, but for the purpose of facilitating arrangements between the Westminster Council and the Building Company, without giving the plaintiffs the right to retain and repurchase the same. The plaintiffs further alleged that the notice was invalid on the ground that the whole of the land to the purchase of which the notice related had not been adjudged by the defendants to project into, obstruct, or prevent the defendants from widening Piccadilly, but that the lands to which the defendants had so adjudged, as stated in the said notice, did not include the whole of the basement of the plaintiffs' premises.

The defence set up was that for the purpose of widening Piccadilly it was necessary for the Westminster Council to acquire possession of the plaintiffs' shops. Defendants said that it was impossible to carry out the improvements without pulling down the whole of the premises. The defendant Building Company were willing to let the plaintiffs have one of their shops when the building was re-erected on terms similar to those under which they now held their premises. They also said that the notices which they served were *bonâ fide*.

Mr. Upjohn, K.C., and Mr. Chubb appeared for the plaintiffs: Roberson and Co., Mr. Freeman, K.C., and Mr. Douglas Hogg, for the plaintiff Reynolds, Mr. Haldane, K.C., Mr. Jenkins, K.C., and Mr. Methold for the Mayor, etc., of Westminster; and Mr. Danckwerts, K.C., and Mr. Methold for the Building Company.

Mr. Upjohn, K.C., having opened the case, reciting the above facts, his Lordship suggested a settlement. He said it appeared to be a question of money.

Mr. Danckwerts said his clients were willing to give the plaintiffs new premises on the same terms as they now held.

Mr. Upjohn and Mr. Freeman said that other questions were at issue, including that of time, viz., the period during which the plaintiffs would be deprived of the use of their premises.

After some evidence had been given Mr. Haldane said that terms had been arrived at which were satisfactory to everybody.

Mr. Freeman, on behalf of Reynolds, said that terms had been arranged which were of interest, not merely to his client, but to the public, as now the work of widening Piccadilly at the point in question could proceed without delay. The notices to treat under Michael Angelo Taylor's Act were not to be objected to, and the matter was to proceed without any objection from the plaintiff. If the jury award the plaintiff a larger sum as compensation than that offered ten days previous to trial the County Council to pay the plaintiff's costs, as if it were under the Lands Clauses Act, to include the costs of title. Otherwise, the plaintiff to pay his own costs. Plaintiff to give up the right of pre-emption, and to remain in possession till March 25. These terms were as against the Mayor, etc., of Westminster. With regard to the Building Company, plaintiff would remain in possession till March 25 free of rent, would give the company facilities for pulling down the premises, and the Building Company would undertake to cause as little inconvenience as possible, the claim for damages being waived as against those defendants. The action to be stayed, costs being paid as between solicitor and client.

Mr. Upjohn, on behalf of Roberson and Co., said it had been agreed that his clients should be provided with two shops in the new building. He would not trouble His Lordship with the other terms, as they were very complicated.

His Lordship assented to all proceedings being stayed upon the terms endorsed on counsels' briefs.

ACTION AGAINST ST. PANCRAS BOROUGH COUNCIL.

In the Chancery Division on the 8th inst. Mr. Justice Joyce concluded the hearing of the case of Colwell and others *v.* the St. Pancras Borough Council.

Mr. Hughes, K.C., and Mr. Beaumont appeared for the plaintiffs; and Mr. Bousfield, K.C., Mr. Younger, K.C., and Mr. Martin for the defendants.

Mr. Hughes, in opening the case for the plaintiffs, said that the action was brought by a number of lessees and occupiers of houses in Great College-street, Camden Town, for an injunction to restrain the defendants from so working their electric generating station and dust destructor as to be a nuisance. The most important point of the case was that of vibration, caused by the working of the engines in the electric generating station. The plaintiffs also complained that a nuisance was caused by reason of dust and smell coming from the dust destructor.

His Lordship asked if the defendants had statutory power to commit the nuisance complained of?

Mr. Hughes replied in the negative. He said the defendants were the undertakers for the purpose of supplying electrical power in St. Pancras. The defendants' electrical generating station had been in operation for some years—or at least a certain part of it. In May, 1902, defendants found it necessary to very much increase their power, and added to their plant three large engines of 750 indicated horse power. The engines running the continuous-current dynamos did not run in step, the result being that they did not get the thrust always at the same time. The consequence of this was that they got a certain periodic increase and decrease in the vibration. In May, 1902, the defendants began working, but not at full load. At this time the plaintiffs occupying these houses began to find at various times a very great increase in the vibration, and complaints were made, and subsequently the present action was commenced. The defendants, in their defence, said that the engines were at present defective in balance, and, consequently, did not run smoothly, but that this could be remedied if time were given for that purpose.

The following experts gave evidence in support of plaintiffs' case, viz., Colonel Rookes Evelyn Bell Crompton, an electrical engineer;

Mr. Jas. Johnson Bourne, an Associate of the Institution of Civil Engineers; and Mr. Edmund Evans, a surveyor.

Mr. Bousfield, on behalf of the defendants, said that his clients' desire was to do everything which would conduce to the sanitary and salubrious character of the neighbourhood. Evidence would be called to prove that there was really nothing as to the dust destructor which any reasonable person could complain of. As to the electric lighting plant, it would be established that the old plant had been working ever since 1895, and nobody had ever really complained about it. When the new plant was installed, he would admit there was a certain amount of vibration caused, but that would be remedied. He submitted that a public body, doing its best to discharge its statutory duty with reasonable skill, was entitled to a certain amount of grace, and if, notwithstanding the skill and experience the body could bring to bear upon it, there was a temporary nuisance, it was not a case for an injunction. It had been suggested that the vibration at the works arose through the nature of the foundations, or, at any rate, to local peculiarities. As soon as this was suggested, defendants set to work to balance the engines more closely, and Professor Dalby, who was the greatest authority on this subject, had been consulted by the defendants on the matter, and they had every reason to hope that everything would be remedied if time were given to the engineers to complete their experiments.

On behalf of the defendants, Major Cardew, a consulting engineer, and Professor Dalby gave evidence to the effect that if time were given to the defendants for that purpose the vibration would be cured by adding balancing weights to the engines, so as to bring them into perfect balance.

His Lordship, in giving judgment, said that it was virtually admitted before him that by reason of the vibration caused by the defendants' works at various times between the months of May and December, the plaintiffs had a right to complain of the annoyance to which they had been subjected, unless it were merely a temporary annoyance. It appeared to His Lordship that, by the vibration caused by the defendants' works and machinery, so much nuisance had been occasioned by the defendants as to justify the action, unless the defendants could show that they were entitled to cause a nuisance by reason of its being, as they alleged, a temporary nuisance. He was of opinion that the amount of the annoyance caused had been a material interference with the comfort of the plaintiffs. In this particular case the annoyance caused had not been temporary, and, in his opinion, was such as was calculated to work material injury to the property of the plaintiffs, and, beyond all question, was most serious, and likely to depreciate the value of the plaintiffs' property. In this particular case there was a clause in the order which authorised the work that nothing in the order should exonerate the undertakers from any indictment or other proceedings for nuisance in the event of any nuisance being occasioned by them. In his opinion there must be an injunction, not distinguishing in any way between the old machinery and the new, restraining the defendants from carrying on these works in such a way as by vibration, or otherwise, to occasion a nuisance or injury to the plaintiffs during the continuance of their leases, and there must be an inquiry as to damages. This order would be without prejudice to any question in reference to any nuisance or annoyance that might be caused by the working of the dust destructor after March 30 next, and the defendants must pay the costs of the action.

On the application of Mr. Younger, His Lordship suspended the operation of the injunction for six months, saying there was to be no nuisance and vibration between 12 p.m. and 7 a.m., and after May 1 between 11 p.m. and 7 a.m. The inquiry as to damages would be directed to the separate interests of the plaintiffs.

ACME WOOD FLOORING COMPANY LTD. *v.* THE SUTHERLAND-INNES COMPANY LTD.—JUDGMENT.

MR. JUSTICE BRUCE, in the Commercial Court of the King's Bench Division of the High Court of Justice, on the 6th inst., gave judgment in the case of the Acme Wood Flooring Company Ltd. *v.* The Sutherland-Innes Company Ltd., which was heard at considerable length during the previous week. The facts sufficiently appear from the judgment.

His Lordship said the action was brought to recover damages for alleged breach of contract made between plaintiffs and the defendants on June 11, 1902. By the contract, which was in writing, Messrs. Churchill and Sim, brokers, on behalf of their principals, the defendants, sold to the plaintiff company about 1500 loads of American satin walnut wood (red gum) at 4*l.* 10*s.* per load of fifty cubic feet, c.i.f., at the buyers' wharf, Victoria Docks, London. Under the contract, about 800 loads were to be delivered during June, and the balance by the end of July. Any wood not in accordance with the contract was to be sold on the sellers' account. The breach complained of was that the defendants failed to deliver 1500 loads of red gum. The first question he had to decide was as to the meaning of the word "about." It was contended by the defendants that it meant 10 per cent., more or less, than 1500 loads. Some witnesses said it meant even a larger margin, but no evidence was given to satisfy him that there was any well-established usage in the timber trade to give so extended a meaning to the word "about." There was no evidence of a usage by which parties standing on their rights allowed so large a margin, although generally the parties to a contract did not always insist on the delivery of the full or exact amount. He thought he should be deciding in accordance with ordinary mercantile usage in determing that the word "about" meant 5 per cent., more or less. Another question was whether the defendants were liable under the contract to pay what were known as London port charges of 2*s.* 6*d.* per ton for discharging the cargo. He thought it was well established that, where goods were sold at a price to cover freight and insurance at London, the seller fulfilled his contract when he put the goods on board ship and sent the consignee the shipping documents and the policies of insurance. In such cases the consignee would be liable to pay any charges for wharfage, etc. Even if the goods did not come forward to their destination under a c.i.f. contract the consignee, having received the documents, would have his remedy against the ship and on his policies. But, under the present contract, the contract expressed that the goods were to be delivered at buyers' wharf, and the London charges were not payable in that case. But part of the timber was discharged at other docks, and the London charges became payable, and yet the defendants sought to charge plaintiffs with these charges to the amount of 89*l.* 5*s.* That, in his opinion, they were not entitled to do in respect of timber not delivered in fulfilment of the contract. As to the shortage of the delivery, the defendants knew that plaintiffs required the wood during the summer months in order to enable them to fulfil their contracts at Newport, Mon. In consequence of the non-delivery of the wood the plaintiffs had to purchase 142 loads of red gum at the then market price, which had increased by 1*l.* 5*s.* per load, which amounted to 177*l.* 10*s.* That sum they were entitled to recover as damages for breach of contract. Then the plaintiffs, being unable to get more red gum, had to buy 134 loads of Jarrah wood at a higher price. There was a conflict of evidence as to that. The defendants said that the plaintiffs could have purchased red gum in the market, and Mr. Alcott said that he had red gum wood in stock, and could have supplied the plaintiffs' requirements, but he was not satisfied that the quality of the wood in Mr. Alcott's possession was sufficiently good to enable the plaintiffs to use it in fulfilment of their Newport contract. Mr. Alcott had himself tendered for the paving contract at Newport, and his tender had not been accepted. He believed the evidence of the plaintiffs that they were unable to get the red gum, and that they were therefore justified in purchasing Jarrah wood in place of the red gum at 6*l.* 10*s.* per load, making a difference on the contract price of 2*l.* per load. They must, therefore, recover that amount. Then there was a claim for 31*l.* 8*s.* 4*d.* for extra cost of carriage by rail over sea freight. He thought, however, that plaintiffs could have arranged to send the wood by sea, and therefore that would be disallowed. As to the rejection of a part of the cargo of the Glenmorgan because the wood was deficient in quality, he was fully satisfied that Messrs. Churchill and Sim had properly made the rejections, and also that they, as brokers, were justified in doing the best they could to minimise the loss. It was clear that the best thing to do with the timber was to cut it up and separate the good portions from the bad, and so carry it to market to the best advantage. There was no reason why, if Messrs. Churchill and Sim could not get a better purchaser, they should not sell the rejected timber to the plaintiffs. It was suggested by the defendants that Messrs. Churchill and Sim had acted improperly, because they had acted as brokers for both parties, and had charged a commission to each, but it was not uncommon for brokers so to act. It was further said that Messrs. Churchill and Sim acted improperly because they had advanced the purchase money to the plaintiffs, but it was proved that that was a common and well-known practice in the City of London for brokers acting for both parties to advance the purchase-money to the buyer. It was established by the evidence that Messrs. Churchill and Sim were an old-established firm, and occupied a high position in the City of London, and he saw no reason for coming to the conclusion that their conduct was otherwise than right and proper. There would be judgment for plaintiffs on the claim and counter-claim, and counsel could settle the exact figures.

Mr. Hamilton said the figure agreed on was 343*l.* 16*s.* 4*d.*

Judgment accordingly, with costs.

DISPUTE AS TO LIABILITY FOR PAVING EXPENSES.

THE case of Lumley *v.* Faupel came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Romer and Mathew, this week, on the appeal of the plaintiff from a judgment of the Lord Chief Justice and Justices Wills and Channell, sitting as a Divisional Court of King's Bench, reversing a decision of the judge of the Kingston County Court. The case was reported in the issue of *The Builder* of May 2, 1903.

The action was brought by the plaintiff against the defendant for 25*l.* 18*s.* 11*d.*, the amount of expenses incurred under Section 150 of the Public Health Act, 1875, in paving the road in front of a house known as No. 46, the Broadway, Wimbledon, of which the plaintiff was the owner, and the defendant formerly the lessee by assignment from one Gordon, to whom the plaintiff by a lease dated October 2, 1879, let the premises for a term of twenty-one years. The assignment by Gordon to defendant was dated May 29, 1893. On November 2, 1899, defendant surrendered his lease to the plaintiff, and was granted a new lease for twenty-one years as from September 29 of that year. This lease contained a covenant that the lessee would pay "all rates, taxes, and assessments whatsoever which now are, or during the said term shall be imposed, or assessed upon the said premises or on the landlord or tenant in respect thereof by authority of Parliament or otherwise." The work in question was completed in January, 1897, notice of apportionment given on January 2, 1902, and demand for payment made on May 3, 1902. The County Court Judge gave judgment for the plaintiff against the defendant for the sum claimed.

From this decision the defendant appealed to the Divisional Court, and that Court allowed his appeal, holding that the words of the covenant were not sufficiently wide to impose a liability on the tenant. Hence the present appeal of the plaintiff.

Mr. W. O. Hodges appeared for the appellant, and Mr. Danckwerts, K.C., and Mr. J. S. Green for the respondent.

At the conclusion of the arguments their Lordships held that the point involved was covered by the decision in the case of "Surtees *v.* Woodhouse," and dismissed the appeal with costs.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

27,316 of 1902.—J. PROCTER: *Windows and Window Sashes.*

The provision in a window of a ventilating passage opening above the corners, and so arranged that it is closed by a rail, or rails, of the window sash when the sash is shut.

776 of 1903.—E. G. SIMPSON, F. C. SIMPSON, and W. J. REYNOLDS: *Method and Apparatus for Making Glass Facing Tiles, Slabs, or the like.*

An apparatus for making glass facing tiles, slabs, and the like, consisting of a heated chamber, means in said heated chamber for conveying the glass plates or the like through same to be heated, means for applying an adhesive material to one side of each glass plate or the like, a hopper containing granite chippings, coke breeze or the like, a slotted drum situate and adjustable in said hopper, to deliver the granite chippings or the like in proper quantities into the heated chamber, means for carrying the granite chippings, or the like, through the heating chamber to be heated, and for sprinkling such chippings on to the adhesive material, and means for receiving superfluous chippings.

3,754 of 1903.—J. C. ALMAN: *Locks and Latches.*

A lock consisting in the combination of a latch bolt, actuated at the under edge by the projecting arm of a gravity lever, a gravity lever pivotted in the upper forward corner of the casing, a draw-bar connecting the said gravity lever with the operating cam mounted on the knob spindle, a key bit, a key-operated stop lever mounted on projections integral with the casing and adapted to engage the gravity lever, thereby locking the same, a key-operated ring or rings encircling the said projections of the

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

casing, each ring being provided with two inwardly-directed projections adapted to receive the shoulders of the key bit, and two off-standing projections adapted to engage the shoulders of the flange of the disc of the said stop lever.

5,636 of 1903.—W. ADCOCK: *Manufacture of Water-closet Seat Hinges, and the like.*

A water-closet seat hinge, or other like hinge, consisting of two sheet metal plates, one of which has a pommel, which is raised on this plate by pressure, and passes through a hole in the other plate, and at its end is enlarged so as to secure the two plates together.

5,702 of 1903.—R. LEGGOTT: *Casement Window and like Openers.*

This invention relates to mechanism arranged and constructed for the opening, closing, and retention in the desired position, of casement, fanlight, and pivotted window and like frames. A vertical or horizontal shaft is mounted to suit the window, or like casement, and to the shaft is secured a lever provided with a sliding bar, adapted, when in its normal condition, to engage with one of a series of recesses formed in a fixed bracket preferably arranged to carry one end of the said shaft, to which are secured one or more levers, each connected by a rod to a bracket secured to the window or like frame. On releasing the sliding bar from a recess in the fixed bracket, and operating the said lever, the vertical or horizontal shaft is to some extent rotated, and the window or the like opened or closed, and there secured on the release of the sliding bar, which, on liberation, automatically engages with one of the recesses in the fixed bracket, thereby securing the window or the like in the desired position.

5,815 of 1903.—H. H. HODKIN: *Construction of Walls for Buildings.*

The construction of walls for buildings, characterised by the use of blocks, or slabs, having a vertical back and an outwardly projecting base upon which the brickwork is built, having a continuous air space, between the bricks and the slab.

5,846 of 1903.—T. G. RHODES and R. GAUNT: *Siphonic Flushing Apparatus.*

A siphonic flushing apparatus, consisting in the combination with a cistern having an outlet or discharge pipe, of a stand pipe located in the cistern in direct communication with the outer pipe, a second pipe located concentrically around the stand pipe and being perforated near its base, a gallery or open-ended cylinder located on the said outer pipe above the perforations, an inclosing bell-shaped sleeve located concentrically over the stand-pipes, having its spread-out base engaging within the said cylinder, and means for carrying and operating the said sleeve.

14,420 of 1903.—J. C. MOON and F. C. MOON: *Tiles or Bricks for Use in Regenerative Furnaces.*

This invention relates to improvements in the formation and arrangement of tiles or bricks used in the settings of regenerative furnaces for inclined and horizontal gas retorts and the like. According to the invention, the vertical tiles are made of square or of approximately square shape, and, if desired, they can be provided with a reduced central portion. At the ends of the baffle tiles, reduced portions of rectangular form are provided, and of the same width as one of the sides of the vertical tiles. The remaining portion of the baffle tiles is made of increased cross-section, in such manner that said remaining or intermediate portion constitutes shoulders running round the whole of said reduced portions. The vertical tiles are made to break joint, not only at the side linings of the waste gas and air passages, but also both vertically and horizontally in the case of the tiles forming the division walls. By the use of this construction of bevel tiles, increased support is obtained; for instance, in a regenerative furnace for gas retorts, a support is obtained in the case of any one vertical tile, not only along the whole length of its upper or lower margin, as the case may be, but also, in every alternate tier of tiles, along a portion of the vertical margins at the opposite ends of such tiles, and at every corner of all the tiles.

19,584 of 1903.—M. WEISE: *Wall-hook for Conduit-Down-or Waste Pipes.*

A wall-hook for conduit-down-or waste-pipes, characterised by two sectors for encircling the pipe, arms on said sectors, one of same being prolonged as a fastening device for connecting the hook to the wall and means for holding the sectors together and in an exact level towards each other.

19,585 of 1903.—P. CLAUSEN: *An Appliance for Gauging the Depth of Sand, Gravel, and the like.*

An appliance for gauging the depth of sand, gravel, and the like, comprising in combination a flat, graduated rod, and having a handle and a boss, a plate having a socket movably arranged upon the top of the rod, and an adjusting screw passing through the socket for the adjustment of the plate in any position.

24,268 of 1903.—C. PRANGEMEIER: *Soot Collectors for Chimneys.*

A soot collector for chimneys, comprising in combination a receptacle to be secured to the chimney, an opening in the back wall of the aforesaid receptacle, and an inclined tube constituting the lower end of the smoke channel, said tube entering the suspended receptacle through the opening in the back wall of the latter.

25,826 of 1903.—J. C. JACKSON and J. OGDEN: *Doors of Hoist Wells.*

This invention relates to improvements in or applicable to the doors of hoist wells. The essential features in the mechanism consist in hinging the door on a vertical hinge shaft, on which it can swing and also slide in a vertical direction. Under the lower hinge, and secured to the vertical shaft so as to rotate therewith, is a cam plate having a depression, into which it takes a bowl, on which bears the weight of the door at the hinge side. When the bowl is in the said depression the door is in its lowermost or normal vertical position. If now, when the door is closed, the vertical hinge shaft is rotated in the direction suitable for opening the door, it will take with it the cam plate and also the door. If, however, any attempt is made to open the door otherwise than by the rotation of the hinge shaft the first movement of the door has the effect of causing the bowl to revolve on the cam plate, and thereby to leave the depression and rise on to the elevated portion of the cam plate. Such rising of the bowl elevates the door on the hinge shaft and lifts the upper edge of the door into such a position as to meet a fixed stop, which prevents its further movement. Normally, when the bowl is in the cam depression and the door in its lowermost position, and when the cam plate and the door move together, the door clears the fixed stop.

26,289 of 1903.—W. D. BISHOP and E. G. RIVERS: *Tread for Staircases, and the like.*

A tread for staircases, and the like, comprising a frame filled with rock, asphalt, and reinforced with wire from the sides of the frame.

26,941 of 1903.—A. MAIR: *Window Fastenings.*

A window fastening, consisting of a stationary catch part for each sash, so shaped that a sliding bolt carried by the sash can be placed in any one of three positions relative to the catch, the change of the position of the bolt being capable of being effected only when each sash is in its closed position.

21,903 of 1902.—J. BLANC: *Reinforced Concrete Construction.*

A system of construction for slabs, floors, ceilings, joists, beams, columns, etc., in reinforced concrete, characterised by the construction of a skeleton or frame, formed of metallic trellis-work of longitudinal rods or bars connected by rods or bars, which, before and after having entwined the said rods or bars, pass into the floor, ceiling, etc., thus establishing an intimate connexion.

290 of 1903.—F. E. CAWS: *Apparatus for Pile Driving.*

The ram by which the pile is driven is raised and dropped by means of an electric motor stationed upon an erection or frame, which may be fastened to the pile and wholly supported thereby, or be partially attached to and supported by the pile and partially otherwise sustained, or be unattached to and unsupported by the pile and having independent support. The pile itself is held erect in position ready for driving by means of a hinged tripod clamped to the pile loosely, so that it may descend freely through the clamp. Or, as an alternative, the pile may be otherwise sustained and guided while being driven by the motor. The motor may repeat its blows automatically or otherwise, the operator being at any convenient distance.

947 of 1903.—F. PURTON: *Slabs or Coverings for Buildings and Structures.*

The improvements are as follows: The expanded metal that is used for the slabs or coverings is made with a selvage that is straight and unpierced, except in special cases for screws or nails, the slabs have the said selvage projecting beyond one of their two sides. The upper end of each slab has its top edge bevelled off, and the lower end has its bottom edge bevelled off. The bevelling of both ends being to the same, or nearly the same angle, so that if the top slab, in the case of the sloping side of a roof, is placed with its lower edge next to another similar slab, the lower end of the upper slab would overlap the top end of the second slab, and any water poured over the upper slab or rain coming upon it would have a tendency to run on to the second slab rather than down between the two slabs by way of the joint. Between all the sides and ends of the slabs a space is left. The width of the space at the sides is regulated by the width of the selvage of expanded metal that projects beyond the cement, cement and sand, or concrete; and the width of the spaces at the ends is regulated by the position of the hooks in the slabs. The spaces are filled with asphalt or other like cementitious substance, which is connected in position at the sides, and prevented from falling through by the expanded metal selvage, and at the top and bottom of the slabs by the framing upon which the slabs rest.

3,007 of 1903.—H. DEAN: *Drain and Subterranean Pipe Indicator.*

A paving brick, block, or frame, combined with a dial and disc, is arranged for the purpose of indicating the position, direction, and depth of sewers, drains, and other subterranean pipes, and the distance or position of water valves, gas syphons, and the like.

5,353 of 1903.—R. A. RAY and W. G. BAXTER: *Construction of Reversible Covers for Channel-ways on Footpaths.*

The cover has a top and bottom flange made of malleable iron connected by a central web running throughout its length. The outer surfaces are diamond-chequered to prevent slipping. The cover fits in a shallow groove in the channel-way, and is raised to prevent the accumulation of dirt that would block the channel-ways and stop the flow of rain water from the down spouts running into the gutter way.

25,393 of 1903.—J. J. LIESSEN: *Process of Manufacturing Artificial Stone Suitable for Pavements, Building Above and Below Ground, and for Hydraulic Purposes.*

An artificial stone, especially suitable for paving purposes, consisting of sintered or melted hydrate of aluminium, such as bauxite, which material is reduced to small particles in the usual manner, but then mixed with cement, clay, plaster, asphalt, and such like, and finally burned.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

February 1.—By J. H. BETHELL.

Upton Park.—378 and 380, Green-st. (s.), u.t. 58 yrs., g.r. 10*l.*, e.r. 180*l.*	£2,680

February 2.—By BOREHAM & CO.

Chelsea.—29, Radnor-st., u.t. 37½ yrs., g.r. 6*l.*, y.r. 30*l.*	340
109, Beaufort-st., u.t. 46½ yrs., g.r. 8*l.*, e.r. 60*l.*	500
Pimlico.—7, Passmore-st., u.t. 17 yrs., g.r. nil, y.r. 40*l.*	320
8, Whittaker-st., u.t. 17 yrs., g.r. nil, y.r. 30*l.*	240

By C. W. DAVIES & SON.

Islington.—58 and 60, St. Peter's-st. (s.), f., y.r. 92*l.*	1,125
Old Ford.—Old Ford-rd., etc., f.g.r. 12*l.*, reversion in 37 yrs.	700
186 and 188, Old Ford-rd. (s.), and factory in rear, u.t. 36 yrs., g.r. 6*l.*, yr. 109*l.* 4s.	1,090

By VENTOM, BULL, & COOPER.

Kensington.—44 and 45, Kensington-pl., u.t. 44½ yrs., g.r. 12*l.*, w.r. 105*l.* 6s.	870
29, Bedford-gdns., u.t. 19 yrs., g.r. 10*l.*, y.r. 50*l.*	400

By DRIVER, JONAS, & Co. (at Guildford).

Stoughton, Surrey.—Guildford-rd., a plot of building land, area ½ an acre, f.	300

February 3.—By BROWETT & TAYLOR.

Forest Gate.—Woodgrange-rd., f.g. rents 47*l.*, reversion in 985 yrs.	1,500
Catford.—Culverley-rd., f.g.r. 10*l.*, reversion in 97½ yrs.	270
Sangley-rd., f.g.r. 22*l.* 1s., reversion in 97½ yrs.	606
Norwood.—Holmesdale-rd., f.g. rents 44*l.* 17s., reversion in 97½ yrs.	1,120

By FOSTER & CRANFIELD.

Teddington.—High-st., "Cromwell House," p.; also plot of Land in Udney Park-rd., f. (in one lot)	1,050

By HOBSON, RICHARDS, & Co.

Forest Gate.—Vansittart-rd., f.g. rents 60*l.*, reversion in 76 yrs.	1,200

By PHILIP STOCK.

Clapham.—2, St. Luke's-rd., u.t. 79 yrs., g.r. 10*l.*, y.r. 48*l.*	450
26, St. Luke's-rd., u.t. 79 yrs., g.r. 10*l.*, e.r. 50*l.*	405

February 4.—By Messrs. FOSTER (at 54, Pall Mall).

Notting Hill.—147, High-st., f.; 9, Johnson-st., also l.g.r. 4*l.* 10s., u.t. 45 yrs., g.r. 12*l.*; 7, 9, and 11, Uxbridge-st., with workshops, forge, etc., u.t. 17 yrs., g.r. 85*l.*, including builder's goodwill (in one lot)	6,700

February 5.—By WINDRUM & CLEAVE.

Victoria Park.—149, Victoria Park-rd., u.t. 48 yrs., g.r. 6*l.*, y.r. 38*l.*	380

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. or leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beer-house; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 16 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 13 0	" " "
Facing Stocks	2 12 0	" " "
Shippers	2 10 0	" " "
Flettons	1 10 0	" at railway depot
Red wire Cuts	1 13 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	4 4 0	" " "
Do. Bullnose	4 10 0	" " "
Best Stourbridge Fire Bricks	4 8 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	13 0 0	" " "
Headers	12 0 0	" " "
Quoins, Bullnose, and Flats	17 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamfered, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers and Headers	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamfered, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand	7 3	per yard, delivered.
Thames Ballast	6 0	" "
Best Portland Cement	29 0	per ton, "
Best Ground Blue Lias Lime	20 6	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fire Clay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms depôt	1 8½	" "
PORTLAND STONE (20 ft. average)— Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancaster in blocks	1 11	per ft. cube, deld. rly. depôt.
Beer in blocks	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 5	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	per ft. cube, deld. rly. depôt.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per foot super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "
HARD YORK—		
Scappled random blocks	3 0	per ft. cube "
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides Ditto	3 0	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "
Hopton Wood (Hard Bed) in blocks	2 3	per ft. cube.
" 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" 3 in do.	1 2½	" "

SLATES.

in. in.	£ s. d.	
20 × 10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20 × 12 " "	13 17 6	" "
20 × 10 best seconds "	12 15 0	" "
20 × 12 " " "	13 10 0	" "
16 × 8 " " "	7 0 0	"
20 × 10 best blue Portmadoc	12 12 6	" "
16 × 8 best blue Portmadoc	6 12 6	per 1000 of 1200 at r. d.
20 × 10 best Eureka unfading green	15 2 6	" "
20 × 12 best Eureka unfading green	17 2 6	" "
18 × 10 " "	12 10 0	" "
16 × 8 " "	10 5 0	" "
20 × 10 permanent green	11 10 0	" "
18 × 10 " "	9 10 0	" "
16 × 8 " "	6 10 0	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depot.
Hip and Valley tiles	3 7	per doz. " "
Best Broseley tiles	50 0	per 1000 " "
Do. Ornamental tiles	52 6	" " "
Hip and Valley tiles	4 0	per doz. " "
Best Ruabon red, brown or brindled do. (Edwards)	57 6	per 1000 " "
Do. Ornamental do.	60 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 0	" " "
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 " "
Do. Ornamental do.	54 6	" " "
Hip tiles	4 1	per doz. " "
Valley tiles	3 8	" " "
Best "Rosemary" brand plain tiles	48 0	per 1000 " "
Best Ornamental tiles	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 8	" " "
Best "Hartshill" brand plain tiles, sand faced.	50 0	per 1000 " "
Do. pressed	47 6	" " "
Do. ornamental, do.	50 0	" " "
Hip tiles	4 0	per doz. " "
Valley tiles	3 6	" " "

WOOD.

	At per standard. £ s. d.	£ s. d.	
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	15 10 0	16 10 0	
Deals: best 3 by 9	14 10 0	15 10 0	
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 10 0	12 10 0	
Battens: best 2½ by 6 and 3 by 6	0 10 0	0 less than 7 in. and 8 in. best	
Deals: seconds	1 0 0	less than best	
Battens: seconds	0 10 0	" " "	
2 in. by 4 in. and 2 in by 6 in.	9 0 0	9 10 0	
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	9 10 0	
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.	
¼ in.	1 0 0	"	
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	5 0 0	
Seconds	4 5 0	4 10 0	
Small timber (8 in. to 10 in.)	3 12 6	3 15 0	
Small timber (6 in. to 8 in.)	3 0 0	3 10 0	
Swedish balks	2 15 0	3 0 0	
Pitch-pine timber (30 ft. average)	3 5 0	3 15 0	
JOINERS' WOOD.			
White Sea: first yellow deals, 3 in. by 11 in.	At per standard. 23 0 0	24 0 0	
3 in. by 9 in.	21 0 0	22 10 0	
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	18 10 0	
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0	
" " 3 in by 9 in.	17 10 0	19 0 0	
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0	
Third yellow deals, 3 in. by 11 in. and 9 in.	15 10 0	16 10 0	
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	12 10 0	
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	22 10 0	
Do. 3 in. by 9 in.	18 0 0	19 10 0	
Battens	13 10 0	15 0 0	
Petersburg: second yellow deals, 3 in. by 11 in.	16 0 0	17 0 0	
Do. 3 in. by 9 in.	14 10 0	16 0 0	
Battens	11 0 0	12 10 0	
Third yellow deals, 3 in. by 11 in.	13 10 0	14 0 0	
Do. 3 in. by 9 in.	13 0 0	14 0 0	
Battens	10 0 0	11 0 0	
White Sea and Petersburg: — First white deals, 3 in. by 11 in.	14 10 0	15 10 0	
" " 3 in. by 9 in.	13 10 0	14 10 0	
Battens	11 0 0	12 0 0	
Second white deals, 3 in. by 11 in.	13 10 0	14 10 0	
" " 3 in. by 9 in.	12 10 0	13 10 0	
" " battens	9 10 0	10 10 0	
Pitch-pine: deals	16 0 0	18 0 0	
Under 2 in. thick extra	0 10 0	1 0 0	
Yellow Pine—First, regular sizes	33 0 0	upwards.	
Oddments	22 0 0	24 0 0	
Seconds, regular sizes	24 10 0	26 10 0	
Yellow Pine oddments	20 0 0	22 0 0	
Kauri Pine—Planks, per ft. cube	0 3 6	0 4 6	
Danzig and Stettin Oak Logs— Large, per ft. cube	0 2 6	0 3 6	
Small " "	0 2 3	0 2 6	
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6	
Dry Wainscot Oak, per ft. sup. as inch	0 0 7	0 0 8	
¼ in. do. do.	0 0 6½	—	
Dry Mahogany—Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11	
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0	
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0	
Teak, per load	17 0 0	21 0 0	
American Whitewood Planks— per ft. cube	0 4 0	—	
Prepared Flooring—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 13 6	0 17 6	
1 in. by 7 in. yellow, planed and matched	0 14 0	0 18 0	
1¼ in. by 7 in. yellow, planed and matched	0 16 0	1 1 6	
1 in. by 7 in. white, planed and shot	0 11 6	0 1 6	
1 in. by 7 in. white, planed and matched	0 12 0	0 14 0	

WOOD—(*continued*)—

Prepared Flooring—(*continued*)—	Per square. £ s. d.	£ s. d.
1¼ in. by 7 in. white, planed and matched	0 14 6	0 16 6
¼ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	0 13 6
¼ in. by 7 in. do. do. do.	0 14 0	0 18 0
1 in. by 7 in. white do. do.	0 10 0	0 11 6
1 in. by 7 in. do. do. do.	0 11 6	0 13 6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	6 5 0	7 5 0
Compound Girders, ordinary sections	8 2 6	9 5 0
Angles, Tees and Channels, ordinary sections	7 17 6	8 17 6
Flitch Plates	8 5 0	8 15 0
Cast Iron Columns and Stanchions including ordinary patterns	7 2 6	8 5 6

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	7 10 0	8 0 0
Staffordshire Crown Bars, good merchant quality	8 0 0	8 10 0
Staffordshire "Marked Bars"	10 10 0	—
Mild Steel Bars	8 15 0	9 5 0
Hoop Iron, basis price	9 5 0	9 10 0
" " galvanised	17 10 0	—
(*And upwards, according to size and gauge.)		
Sheet Iron (Black)— Ordinary sizes to 20 g.	9 15 0	—
" " 24 g.	10 15 0	—
" " 26 g.	12 5 0	—
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 15 0	—
Ordinary sizes to 22 g. and 24 g	13 5 0	—
" " 26 g.	14 5 0	—
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	16 0 0	—
" " 22 g. and 24 g.	16 10 0	—
" " 26 g.	18 0 0	—
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g	12 15 0	—
" " 22 g. and 24 g.	13 5 0	—
" " 26 g.	14 0 0	—
Best Soft Steel Sheets, 6ft. by 2ft. to 3 ft. by 20 g. and thicker	11 15 0	—
Best Soft Steel Sheets, 22 g. & 24 g	12 15 0	—
" " " 26 g	14 0 0	—
Cut nails, 3 in. to 6 in.	9 5 0	9 15 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up	14 5 0	—
Pipe in coils	14 15 0	—
Soil pipe	17 5 0	—
Compo pipe	17 5 0	—
ZINC—Sheet— Vieille Montagne ..... ton	26 5 0	—
Silesian	26 0 0	—
COPPER— Strong Sheet ..... per lb.	0 0 10½	—
Thin "	0 0 11½	—
Copper nails "	0 0 11	—
BRASS— Strong Sheet ..... per lb.	0 0 10	—
Thin "	0 0 11	—
TIN—English Ingots "	0 1 5	—
SOLDER—Plumbers' "	0 0 6½	—
Tinmen's "	0 0 8	—
Plowpipe "	0 0 9	—

ENGLISH SHEET GLASS IN CRATES.

	2d. per ft. delivered.
15 oz. thirds	2d. per ft. delivered.
" fourths	1½d. " "
21 oz. thirds	3d. " "
" fourths	2½d. " "
26 oz. thirds	3½d. " "
" fourths	3d. " "
32 oz. thirds	4½d. " "
" fourths	4d. " "
Fluted sheet, 15 oz.	2½d. " "
" 21 oz.	3½d. " "
¼ Hartley's Rolled Plate	1½d. " "
⅜ " " "	2d. " "
½ " " "	2½d. " "

OILS, &c.

	£ s. d.	
Raw Linseed Oil in pipes or barrels	per gallon 0 1 8	
" " " in drums	" 0 1 11	
Boiled " " in pipes or barrels	" 0 1 11	
" " " in drums	" 0 2 2	
Turpentine, in barrels	" 0 3 10	
" in drums	" 0 4 0	
Genuine Ground English White Lead	per ton 19 0 0	
Red Lead, Dry	" 19 0 0	
Best Linseed Oil Putty	per cwt. 0 7 6	
Stockholm Tar	per barrel 1 12 0	

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

MEETINGS.

FRIDAY, FEBRUARY 12.

Royal Institution.—Very Rev. J. A. Robinson, Dean of Westminster, on "Westminster Abbey in the Early Part of the Seventeenth Century." 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. T. S. Nash on "The Electricity and Destructor Station at Plumstead." 8 p.m.

Hampstead Heath Protection Society.—Seventh Annual General Meeting, in the Lecture Room, Stanfield House, High-street, the Earl of Mansfield, President, in the chair. 8.15 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. Priestley, B.A., on "Sanitary Law," II. 7 p.m.

Glasgow Architectural Craftsmen's Society.—Mr. J. Jeffrey Waddell on "City Architecture." 8 p.m.

MONDAY, FEBRUARY 15.

Royal Institute of British Architects.—Professor Frank Clowes, D.Sc., on "The Bacterial Disposal of Sewage from Isolated Buildings," with lantern illustrations. 8 p.m.

Regent-street Polytechnic (University Extension Lectures).—Professor Vivian B. Lewes on "The Chemistry of Air, Fire, and Water," III. 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. J. Priestley, B.A., on "Sanitary Law," III. 7 p.m.

Liverpool Architectural Society.—Mr. F. Rimmington on "Small Houses of To-day and their Architects."

TUESDAY, FEBRUARY 16.

Institution of Civil Engineers.—Mr. Alphonse Steiger on "The Forms of Turbines most Suitable for Low Falls." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. E. J. Steegmann on "Meteorology." 7 p.m.

Institute of Sanitary Engineers, Ltd. (Lectures in Practical Sanitary Science).—Dr. J. Priestley, B.A., on "Sanitary Law," II. 7 p.m.

Northern Architectural Association (Students' Sketching Club).—Annual Social Gathering and Exhibition of Sketches and Measured Drawings in the hall of the Church Institute, Hood-street. 7.30 p.m.

Dundee Institute of Architecture.—Mr. S. Carmichael on "The Place of the Nude in Art." 8 p.m.

WEDNESDAY, FEBRUARY 17.

Architectural Association, Discussion Section.—Mr. W. Williams on "The Legal Position of an Architect." 7.30 p.m.

Society of Arts.—Mr. A. R. Sennett on "Garden Cities in their Relation to Industries and Agriculture." 8 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. R. Dudfield on "Duties of a Sanitary Inspector: Outdoor." 7 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of the Members. 8 p.m.

Edinburgh Architectural Association.—Mr. R. H. Bow, C.E., on "The Strength of Scaffolding," illustrated by diagrams and models. 8 p.m.

THURSDAY, FEBRUARY 18.

Carpenters' Hall (Free Lectures on Matters Connected with Building).—Professor Vivian B. Lewes on "Our Atmosphere and its Relation to Health," illustrated by experiments. 8 p.m.

FRIDAY, FEBRUARY 19.

Architectural Association.—Mr. W. H. White on "Corner Houses." 7.30 p.m.

Institution of Mechanical Engineers.—Fifty-Seventh Annual General Meeting. The annual report of the council will be presented, and the results of the ballot for the annual election of the president, vice-presidents, and members of council will be announced. The discussion on "Heat Treatment of Steel" will then be continued and concluded, after which a paper on "The Motion of Gases in Pipes, and the Use of Gauges to Determine the Delivery," will be read by Mr. Richard Threlfall, F.R.S., of Birmingham. 8 p.m.

Royal Institution.—Mr. H. Brereton Baker, M.A., F.R.S., on "Some Unexplained Experiments," illustrated. 9 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. R. Dudfield on "Duties of a Sanitary Inspector: Indoor." 7 p.m.

SATURDAY, FEBRUARY 20.

Royal Institution.—Right Hon. Lord Rayleigh on "The Life and Work of Stokes," I. 3 p.m.

Junior Institution of Engineers.—Visit to the Colonial Consignment and Distributing Company's Frozen Australasian Meat Store, Nelson's Wharf, Commercial-road, Lambeth, under the guidance of Mr. C. S. T. Molecey, A.M.I.C.E., Chief Engineer. 2 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at a house in Stoke Newington. 3 p.m.

Association of Managers of Sewage Disposal Works (Meeting at Westminster Hotel, New York-street, Leeds).—Mr. J. Ashton on "The Disposal and Utilisation of Sewage Sludge." 3 p.m.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ALNWICK.—For rebuilding the stone bridge at Embleton South Farm, for the Rural District Council. Mr. M. Temple Wilson, architect:—

McLaren & Co.	£95 0 0
J. & G. Green, Warkworth*	103 19 6

ASTON MANOR.—For the construction of tramlines, pits, etc., and alterations to existing tramway depôt at Witton-lane, for the Corporation. Mr. Robert Green, A.M.Inst.C.E., 37, Waterloo-street, Birmingham. Quantities by engineer:—

George Trentham, Birmingham*	£11,934 11 2

BANBURY.—For the supply of Hartshill stone, for the Town Council. Mr. N. H. Dawson, Borough Surveyor, Town Hall, Banbury:—

		per ton.
Tees Hartshill Granite and Brick Co., Ltd., Hartshill*	Hand-picked stone	7 9
	Coarse and fine chippings	7 3
	Machine-broken Hartshill	9 3

BLACKROCK (Dublin).—For wrought-iron railing, gates, and wickets at Blackrock College, for the College. Mr. P. H. McCarthy, B.A., B.E., 32, Bachelors'-walk, Dublin:—

G. B. Goslin	£1,300	John Elwell	£670
C. Steer & Co.	1,100	Musgrave & Co., Ltd., Belfast*	635
Kennan & Sons	730		
J. & C. McGloughlin, Ltd.	691		

[Bayless, Jones, & Bayless, Wolverhampton, and James Fagan & Sons, Dublin, gave a schedule price which in each case came to more than the lowest tender.]

BRIDLINGTON.—For erection of house and shop, South Side, Clough Bridge-road, for Mr. C. Cast. Mr. J. Earnshaw, architect, Carlton House, Bridlington:—

E. Corner	£605 0 0	A. A. Booth	£546 0 0
Storr & Son	590 0 0	S. Spink	537 14 0
W. Hoggard	572 19 6	F. Kneeshaw	534 0 0
Smallwood & Shaw	571 17 6	Sampson & Siddall*	530 0 0
C. Wilson	566 15 6		

[All of Bridlington.]

BRISTOL.—For pulling down No. 35, Mary-le-Port-street, and premises in rear, and erecting new warehouse, for Messrs. Lindrea & Co., Ltd. Messrs. Herbert J. Jones & Son, architects, 12, Bridge-street, Bristol:—

Forse & Son	£9,450 0	Eastabrook & Son	£8,320 0
H. J. Jones & Co.	9,197 0	J. Browning	8,317 0
W. Cowlin & Son	9,084 0	A. J. Beaven	8,065 0
A. E. Longden	9,080 0	R. F. Ridd	8,040 10
J. E. B. James	8,992 7	G. Humphreys	8,008 0
Stephens & Bastow	8,978 0	R. Wilkins & Sons, Bristol*	7,968 0
E. Walters & Son	8,686 0	S. Roberts	7,685 0
A. E. Denby & Co.	8,399 0	Radford & Greaves	6,824 0

CLACTON-ON-SEA.—For alteration and conversion of business premises in Beach-road, Clacton-on-Sea, for Messrs. Starling & Son. Mr. George Gardiner, architect and surveyor, Clacton-on-Sea:—

A. W. Coleman	£225 0 0	H. W. Gladwell	£193 14 6
W. H. Bray	202 10 0	James McKay*	183 0 0

CLAY CROSS.—For sinking a waterworks well, etc., for the Clay Cross Urban District Council. Mr. W. H. Radford, C.E., Albion-chambers, King-street, Nottingham:—

W. Antrobus, Stockport	£223 17 0

CLAY CROSS.—For putting down a borehole for additional water supply, for the Urban District Council. Mr. W. H. Radford, C.E., Albion-chambers, King-street, Nottingham:—

W. Antrobus, Stockport	£193 15 0

CLAY CROSS.—For laying about 2,347 yards of 8 in. c.i. pipes and taking up pipes, for the Urban District Council. Mr. W. H. Radford, C.E., Albion-chambers, King-street, Nottingham:—

H. H. Barry, Radcliffe-on-Trent, Nottingham	£330

DURHAM.—For sewerage works, Gilesgate Moor, New Durham, and Dragon Villa, etc., Belmont and West Sherburn, for the Durham Rural District Council. Mr. G. Gregson, Surveyor, 38, Saddler-street, Durham. Quantities by the Surveyor:—

Hardy & Atkinson	£5,792 2 5	F. Millward & Co.	£4,384 0 0
G. T. Manners	5,300 0 0	J. G. Bradley	4,054 12 1
Johnston & Strong	5,229 6 0	John Carrick, Durham*	3,997 4 2
J. Laing & Son	4,805 0 0		

EAST STONEHOUSE.—For construction of a concrete landing stage at Firestone Bay, for the Urban District Council. Mr. F. A. Wiblin, Surveyor, Town Hall, East Stonehouse:—

J. Shaddock, Plymouth	£1,081 19 0
A. J. Richards, Plymouth	1,079 0 0
E. Duke, Plymouth	969 18 0
T. Shaddock, Plymouth	827 0 0
W. C. Shaddock, Plymouth	794 0 0
Lapthorn & Co., Plymouth	782 0 0
J. H. Blackell & Son, East Stonehouse	779 0 0
W. E. Blake, Plymouth	750 0 0
W. T. Stevenson, Plymouth	715 0 0
T. G. Taylor & Son, East Stonehouse	695 0 0
J. Taylor, East Stonehouse	687 0 0
Matcham & Co., Ltd., Plymouth	663 0 0
T. Payne, Plymouth	644 0 0
T. Crews, East Stonehouse	595 0 0
A. Andrews, Plymouth	585 0 0
Jenkin & Son, Devonport*	550 0 0

GALLOWS PLAIN.—For alterations, etc., at Isolation Hospital, for Hertford and Ware Joint Hospital Board. Mr. W. Leonard Grant, architect, Sittingbourne:—

Ekins & Co., Ltd., Old Cross, Hertford*	£3,857

HORWICH.—For sewering, levelling, paving, flagging, etc., fifteen new streets, for the Urban District Council:—

Edward Yates, Horwich*	£3,377
Finch, Webster, & Mustanley; W. J. Slater; Peter Heyes; Wm. Kearns; J. Holes; Etheridge & Clark; Bennie & Thompson	At Schedule of Prices.

LEYTON.—For hot-water heating, for the Urban District Council Education Committee. Mr. W. Jacques, Architect to the Committee, 2, Fenchurch-street, E.C.:—

Allin & Sons	£461 0 0	Werner, Pfleiderer, & Perkins	£350 11 2
Haden & Sons	458 0 0	General Iron Foundry	348 0 0
Defries & Co.	404 14 0	Crittall & Co.	343 17 6
R. H. & J. Pearson	387 0 0	Brightside Foundry Co.	343 0 0
G. & E. Bradley	367 10 0	J. T. Halsey	331 15 6
Troup, Curtis, & Co.	355 5 3	J. & W. Jeal	318 0 0
Tamplin & Makooski	355 0 0	Lancashire Heating Co.*	318 0 0

LONDON.—For extension of class rooms and other alterations, together with repairs and painting, at the Foundling Hospital, W.C. Mr. John B. Chubb, architect, Resident Surveyor. Quantities by Messrs. C. John Mann & Son, 29, Great George-street, Westminster:—

James Carmichael	£1,920	Higgs & Hill	£1,834
William Shepherd	1,876	Parkinson & Son	1,789
Todd & Newman	1,853	Prestige & Co.*	1,759

LONDON.—For the erection of new offices in Euston-road, London, for the Hearts of Oak Benefit Society. Messrs. Essex, Nicol, & Goodman, architects, Colmore House, 21, Waterloo-street, Birmingham. Quantities by Mr. A. A. Tween, 147, Palmerston House, Old Broad-street, London:—

——	Complete Building.	Extra, if Granite instead of Portland Stone.	Extra, if Brickwork in Portland Cement instead of Lime Mortar.	Extra, if Lighting Areas Glazed Bricks.	Extra, if Wood Block Flooring.	Extra, if Oak Joiner's Work.	——
	£	£	£	£	£	£	£
J. C. Wall & Co.	50,252	1,200	641	817	586	4,051	57,547
A. Kellett & Sons, Ltd.	42,745	947	690	1,453	809	3,997	50,641
G. E. Wallis & Sons	41,884	750	434	800	626	6,000	50,494
G. Parker	42,383	923	695	1,446	795	4,058	50,300
Kirk & Randall	42,490	1,100	707	800	625	4,400	50,122
Spencer, Santo, & Co., Ltd.	43,600	811	310	707	488	3,760	49,676
C. Miskin & Sons	44,000	1,300	372	700	660	2,600	49,632
J. Smith & Sons, Ltd.	43,493	385	595	747	575	3,691	49,486
G. Godson & Sons	41,544	893	682	1,277	782	4,134	49,312
W. Downs	42,973	725	575	610	580	3,437	48,900
J. Chessum & Sons	41,480	811	310	700	656	4,586	48,543
H. L. Holloway	41,221	750	400	635	500	5,000	48,506
Treasure & Son	42,918	710	620	527	531	3,068	48,374
Stimpson & Co.	43,000	900	372	800	600	2,700	48,372
Martin, Wells, & Co., Ltd.	42,295	897	416	719	612	2,880	47,819
H. Lovatt, Ltd.	41,600	1,427	335	553	503	3,068	47,486
C. Dearing & Son	41,198	735	620	787	541	3,304	47,185
T. H. Kingerlee & Son	41,972	1,133	372	652	581	2,454	47,164
Leslie & Co., Ltd.	41,083	852	310	665	578	3,667	47,155
W. Lawrence & Sons	40,384	748	310	747	626	3,671	46,486
B. E. Nightingale	40,918	670	372	775	554	2,863	46,152
J. Shillitoe & Sons	41,300	850	372	695	542	2,300	46,059
F. G. Minter	39,470	760	610	910	590	3,226	45,566
Patman & Fotheringham, Ltd.	40,173	845	375	532	570	3,055	45,550
A. N. Coles	39,840	284	1,364	880	719	2,249	45,336
Hockley & Co.	40,082 17 6	875 8 11	620	616 18 1	648 10	2,359	45,202 14 6
C. Gray Hill*	40,000	840	620	642 17 7	670	2,237	45,009 17 7
A. Porter‡	39,638	943	248	784	578	1,002	43,193
Sabey & Son	43,118	—	No Alternative Prices.			—	—

[Architects' estimate, £43,000 for complete building.]

‡ Conditions not complied with.

[See also page 181.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom required.	Premiums.	Designs to be delivered
Proposed Free Library	Malvern U.D.C.	30*l.*, 20*l.*, and 10*l.*	April 8
*Designs for Isolation Hospital	Barnet Hospital Committee	Not stated	May 9

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
*Repairs to Anglican Church, Guildford Cemetery	.....	A. J. Sturges, 25, High-street, Guildford	Feb. 13
Two houses, Kitchen-lane, Queensbury	.....	J. Drake & Son, Architects, Queensbury	do.
Electric Light Installation, Broughton Higher Gr. Sc.	Edinburgh School Board	Crawford & Cumming, Engineers, 122, George-st., Edinburgh	do.
Steel Buoys, etc.	Trinity House Corporation	E. Price Edwards, Secretary, Trinity House, London, E.C.	Feb. 15
Sewer, Northgate-street and St. Stephen's-road	Canterbury Corporation	A. C. Turley, City Engineer, Guildhall-street, Canterbury	do.
Roads, Workhouse, Selly Oak	King's Norton Guardians	T. B. Hall & Jones, Eng., King's-ct., 117, Colmore-row, B'mingham	do.
House, Victoria-road, Elland	.....	J. F. Walsh & G. Nicholas, Arch., Museum-chambers, Halifax	do.
Timber Store Queen's Bridge, Belfast	G.N. Ry. Co., Ireland	W. H. Mills, Engineer, Amiens-street Terminus, Dublin	do.
Materials	Downham R.D.C.	H. Wayman, Clerk to Council, Downham Market	do.
Galvanised Steel Ashbins	Chorley Corporation	W. Cunliffe, Inspector of Nuisances, Fire Station, Chorley	do.
Furniture, Copley Schools	Halifax Education Committee	J. Lord, C.E., Borough Engineer, Town Hall, Halifax	do.
Paving of Birds Royd-lane	Brighouse Corporation	S. S. Haywood, Borough Surveyor, Municipal Offices, Brighouse	do.
Whinstone, etc.	Selby U.D.C.	B. McGregor Gray, Town Surveyor, Town Hall, Selby	do.
Alterations, etc., Morice Town Council Schools	Education Committee, Devonport	W. H. Crang, Secretary, Education Office, Devonport	do.
Whinstone and Slag	Bridlington R.D.C.	J. B. Simpson, Clerk, Long-lane, Bridlington	do.
Materials	Colne Corporation	T. H. Hartley, Borough Surveyor, Town Hall, Colne	do.
Feeder Mains	Preston Corporation	W. H. Tittensor, Engineer, 25, Burrow-road, Preston	do.
Furniture, Hyde Park-road School	Plymouth Education Committee	E. C. Cook, Secretary, 18, Princess-square, Plymouth	do.
Supplies	Finsbury Borough Council	Boro' Surveyor's Department, Town Hall, Rosebery-av., London	do.
Firebricks at Gasworks	Glasgow Corporation	Gas Manager, 45, John-street, Glasgow	do.
Sherston Water Supply	Malmesbury R.D.C.	C. Combes, Engineer, Tisbury	Feb. 16
Stores for the Dist. Fund, Gas & Electric. Committees	Stockton-on-Tees Corporation	Borough Engineer, Town Hall, Stockton-on-Tees	do.
Estate Offices, Goldtops, Newport	Right Hon. Lord Tredegar	G. P. Mitchell Innes, Tredegar Estate Offices, Newport, Mon.	do.
Greenhouse, Hodgkin Park, Benwell	Benwell and Fenham U.D.C.	W. P. Pattison, Surveyor, Council Offices, Benwell	do.
Additions, Heathfield Ho. Schl., Richmond-rd., Cardiff	Sisters of Providence	James & Morgan, Architects, Charles-street-chambers, Cardiff	do.
Materials	Bermondsey Borough Council	F. Ryall, Town Clerk, Town Hall, Spa-road, Bermondsey	do.
Repair of Holmesdale and other Roads	Croydon Corporation	Borough-road Surveyor's Office, Town Hall, Croydon	do.
Cast Iron Pipes	Chorley Corporation	J. W. Allin, Gas Engineer, Chorley	do.
Two-story Transit Shed, Albert Edward Docks	Preston Corporation	J. Barron, Engineer, Ribble Navigation Office, Preston	do.
Wooden Footbridge over Connswater River	Belfast Improvements Committee	Office of City Surveyor, Belfast	do.
Stone and Gravel	Salisbury R.D.C.	F. Hodding, Clerk, Market House-chambers, Salisbury	do.
Supplies (Irish Manufacture)	Blackrock U.D.C.	Town Clerk's Office, Blackrock, co. Dublin	do.
Road Materials, etc.	Tottenham U.D.C.	E. Crowne, Coombescroft House, 712, High-road, Tottenham	do.
Engine and Dynamo, Church-street Baths	Camberwell Borough Council	W. Oxoby, Borough Engineer, Town Hall, Camberwell, S.E.	do.
Annual Contracts	Bacup Corporation	Borough Surveyor's Office, Bacup	Feb. 17
Materials	Maidstone R.D.C.	J. S. Killick, Surveyor, Barming, Maidstone	do.
Free Wiring and Hire of Motors	Islington Borough Council	Electrical Engineer, 50, Eden-grove, Holloway, N.	do.
Brickmaking Plant	Gas Committee, Leeds Corporation	R. H. Townley, Gas Offices, East Parade, Leeds	do.
Machinery for Making Slabs	do.	do.	do.
Materials and Stores	Bootle Corporation	Borough Engineer's Office, Town Hall, Bootle	do.
Tools, Cement, etc.	Rochester Corporation	W. Banks, City Surveyor, Guildhall, Rochester	do.
Revolv. Sprinklers, Penstocks, etc., Sew. Wks., Earlswd.	Reigate Council	C. J. Crece, Town Clerk, Municipal Buildings, Reigate	do.
Whinstone	Tynemouth R.D.C.	J. Waters, Surveyor, Longbenton, Newcastle-on-Tyne	do.
Metal for Roads in the Gorbals, etc.	Renfrew County Council	W. H. Hill, 194, Ingram-street, Glasgow	do.
*Boundary Wall, South Park	M.B. of Fulham	Borough Engineer, Town Hall, Walham Green	do.
Street Works	Southend-on-Sea Corporation	E. J. Elford, Borough Surveyor, Southend-on-Sea	Feb. 18
Altering Railway Hotel, Abersychan	.....	T. Roderick, Architect, Glebeland, Merthyr Tydfil	do.
Broken Granite	Wigston Magna U.D.C.	Office of Surveyor, Station-road, Wigston Magna, Leicester	do.
Ninety Tons c.i. Water Pipes	Rothwell U.D.C.	J. T. Pears, Surveyor, Council Offices, Rothwell, near Leeds	do.
1,000 Tons of Lime	Salford Gas Committee	W. W. Woodward, Engineer, Gas Offices, Bloom-street, Salford	do.
Street Works, Merton	Croydon R.D.C.	R. M. Chart, F.S.I., Town Hall, Croydon	do.
Asphalting Playground at Intake Board School	Handsworth School Board	B. Bagshawe, 63, Norfolk-street, Sheffield	do.
Post Office, Portobello, Edinburgh	Commis. H.M. Wks. & Public Bdgs.	H.M. Office of Works, Edinburgh	do.
Materials	Felixstowe and Walton U.D.C.	Surveyor to Council, Town Hall, Felixstowe	do.
Concrete Flagging, Christ Church-square, Hulme	Manchester Parks Committee	Office of City Architect, Town Hall, Manchester	do.
Wesleyan Chapel, Vestries, etc., Crowle	.....	T. B. Thompson, Architect, 15, Parliament-street, Hull	do.
School Buildings, Hull	Boulevard Baptist Chapel Trustees	do.	do.
Washing Machine at Hillingdon Workhouse	Uxbridge Guardians	Mr. Copping, Master of the Workhouse	do.
Enlargement of Board Room at Workhouse	Battle Guardians	Master of the Workhouse, Battle, Sussex	do.
Science School, Boston Grammar School	The Governors	J. Rowell, Architect, Market-place, Boston	do.
*Alterations, etc., to Relief Station, Borough-road	Southwark Union	G. D. Stevenson, 13 and 14, King-street, E.C.	do.
Granite and Slag, etc.	Hardingstone R.D.C.	J. Haviland, 2, St. Giles'-square, Northampton	Feb. 19
Carting of Granite and Slag	Horncastle R.D.C.	J. E. Chatterton, Clerk, Council Offices, Horncastle	do.
Brick Bridge over River Irk, Victoria-av., Blackley	Manchester Parks, etc., Committee	City Surveyor's Office, Town Hall, Manchester	do.
Foundations for Gas-holder Tank, Penrhiwceiber	Mountain Ash U.D.C.	Corbet, Woodall, & Son, Eng., Palace-cham., Bridge-st., W'minster.	do.
Conveniences, Farnley Recreation Ground	Leeds Corporation	City Engineer's Office, Leeds	do.
Manager's House, Linkwood Distillery	.....	W. C. Reid, Architect, 2, Cuibard-street, Elgin	do.
*Alteration of Prudential Assurance Company's Offices	Prudential Assurance Company	Paul Waterhouse, 20, New Cavendish-street, Portland-place, W.	do.
Supplies	Rathmines and Rathgar U.D.C.	F. P. Fawcett, Clerk, Town Hall, Rathmines	Feb. 20
Electricity Stores	do.	do.	do.
Station Lighting and Wiring to Motors	Radcliffe U.D.C.	Lacey & Sillar, 2, Queen Anne's-gate, Westminster, London	do.
Testing Instruments, etc.	do.	do.	do.
Town Clock in Clock Tower	Redruth U.D.C.	H. Page, Clerk to Council, Redruth	do.
Residence at Wadebridge, Cornwall	Mrs. Robertshaw	Town Hall, Wadebridge, Cornwall	do.
Materials	Northampton Corporation	A. Fidler, Borough Engineer, Guildhall, Northampton	do.
200 Yards Earthenware Pipe Sewer	Hornsea U.D.C.	Surveyor's Office, Public Rooms, Hornsea, near Hull	do.
Alterations, etc., to Two Cottages at Depot	do.	do.	do.
Tramway Stores	Sheffield Corporation	A. R. Fearnley, Tramways Department, Town Hall, Sheffield	Feb. 22
Scavenging, etc.	Wigston Magna U.D.C.	W. G. J. Clark, Station-road, Wigston Magna, Leicester	do.
Retorts, Fireb'ks, etc., Sowerby Bridge, etc., Gas Wks.	Sowerby Bridge U.D.C.	W. A. Bissell, Engineer, Gas Works, Sowerby Bridge	do.
Materials and Labour	Rawtenstall Corporation	Borough Surveyor, Municipal Offices, Rawtenstall	do.
Stone for Roads	Beverley R.D.C.	E. Picker, C.E., Surveyor, Beverley	do.
Alterations to Head Offices, 88, Renfield-street	Glasgow Tramways Committee	F. Burnett, F.S.I., 180, Hope-street, Glasgow	do.
*Watering Streets and Roads	St. Marylebone Borough Council	Borough Surveyor, Town Hall, Marylebone-lane, W.	do.
Haulage of Stone	.....	A. T. Davis, County Surveyor, Shire Hall, Shrewsbury	Feb. 23
Winding Shaft, etc., at Pumping Station, Falmer	Brighton Corporation	F. J. Tillstone, Town Clerk, Town Hall, Brighton	do.
Materials	Southall-Norwood U.D.C.	R. Brown, Engineer, Public Offices, Southall, Middlesex	do.
Two Houses and Shops, London-road	J. Tiffen	H. H. Hodgkinson, Architect, 9, Lowther-street, Carlisle	do.
Sewerage Works, Mortlake	Richmond Main Sewerage Board	W. Fairley, Engineer to Board, West Hall-road, Kew Gardens	do.
784 Yards Stoneware Pipe Sewers, Shepley Fields	Andenshaw U.D.C.	W. Clough, Engineer, 2, Guide-lane, Andenshaw	do.
Excavating, etc., Cemetery-road	do.	do.	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, &c., supplied by	Tenders to be delivered
Tabernacle, Wesleyan Chapel, Rhymney	Rev. J. Rowlands	J. P. Powell, Architect, 29, Ruthin-gardens, Cardiff	Feb. 23
*Making-up Roads, Supplying Carts and Vans	Acton D.C.	Council's Surveyor, 57, High-street, Acton, W.	do.
*Supply of Materials	do.	do.	do.
Quarrying and Carting Road Materials	Midlothian County Council	Road Office, 29, St. Andrew-square, Edinburgh	do.
*Cleaning and Painting, Pitfield-street Swimming Bath	M. B. of Shoreditch	Borough Surveyor, Town Hall, Old-street, E.C.	do.
*Works and Materials	Bromley Borough Council	Municipal Offices, Bromley, Kent	do.
*Annual Contracts	Willesden District Council	Council's Engineer, Dyne-road, Kilburn, N.W.	do.
*Roadmaking and Paving Works	do.	do.	do.
*Road-making Works	Walstamstow U.D.C.	Engineer to the Council, Town Hall, Walthamstow	do.
Public Baths, Picton-road, Wavertree	Liverpool Corporation	W. R. Court, Engineer, Municipal Offices, Liverpool	Feb. 24
Premises, Kiltimagh, co. Mayo	Hibernian Bank, Ltd.	W. H. Byrne & Son, Architects, 20, Suffolk-street, Dublin	do.
Tenements, Overnewton-street	Glasgow Corporation	City Engineer, 64, Cochrane-street, Glasgow	do.
*Painter's Colours, Varnishes, and Builder's Materials	Metropolitan Asylums Board	Office of Board, The Embankment, E.C.	do.
*Material for Roadmaking Works	Wood Green U.D.C.	Council's Surveyor, Town Hall, Wood Green, N.	do.
C.I. Water Pipes, Hydrants, etc.	Nantwich R.D.C.	J. A. Davenport, C.E., 152, Hospital-street, Nantwich	Feb. 25
Excavating and Laying Pipes	do.	do.	do.
Plating Wheels of Steam Roller	Cheshunt U.D.C.	R. H. Jeffes, Engineer, Manor House, Cheshunt	do.
*Two Water Vans and One Water Cart	M.B. of Woolwich	F. Sunmer, A.M.I.C.E., Borough Engineer, Maxey-rd., Plumstead	do.
*Works and Materials	Hackney Borough Council	Borough Surveyor, Town Hall, Hackney, N.E.	do.
Stoneferry Bridge Works	Hull Corporation	A. E. White, M.Inst.C.E., City Engineer, Hull	Feb. 26
Materials	Salford Tramways Committee	Tramway General Offices, 32, Blackfriars-street, Salford	do.
Materials	Newton-in-Makerfield U.D.C.	Stores Clerk, Gasworks, Earlestown, Lancashire	Feb. 27
Lyme-street Works	do.	Surveyor to Council, Town Hall, Earlestown, Lancashire	do.
Road Materials, etc.	Huntingdonshire County Council	H. Leete, County Surveyor, Huntingdon	do.
Hot-Water Supply, etc., Three Counties Asy., Hitchin	Visiting Committee	R. E. Middleton, 17, Victoria-street, S.W.	do.
Buildings adjoining Mortuary, Surbiton	Surbiton U.D.C.	Surveyor, District Council Offices, Surbiton	do.
Resetting Three Beds of Gas Retorts	Knaresborough U.D.C.	T. Mainman, Clerk, Urban District Council	do.
500 Tons of c.i. Pipes	Glasgow Corporation	J. R. Sutherland, Engineer, 45, John-street, Glasgow	do.
Alterations to Buildings, etc., at Flimby Lodge	Cockermouth Guardians	W. G. Scott & Co. Architects, Victoria-buildings, Workington	do.
*New Fire Brigade Station	Eton U.D.C.	Council's Surveyor, Council Offices, High-street, Eton	do.
Road Stone Chippings and Slag	Worcester Corporation	J. H. Garrett, County Road Surveyor, Shire Hall, Worcester	Feb. 29
Materials	Manchester Rivers Committee	Sec. of Rivers Department, Town Hall, Manchester	do.
Six Houses at Dinnington Colliery	Cramlington Dis. Co-op. Soc., Ltd.	J. G. Crone, Architect, 21, Grainger-st. West, Newcastle-on-Tyne	do.
Electric Lighting, Cambuslang	Lanark County Council	Hunter & Jack, Electrical Engineers, 101, St. Vincent-st., Glasgow	do.
*Annual Contracts	Hendon U.D.C.	Council's Surveyor, Council Offices, Hendon, N.W.	do.
*Road-making Works	Hanwell U.D.C.	Surveyor, Council's Offices, Church-road West, Hanwell, W.	do.
*Erection of Conveniences, Sydenham Wells Park, S.E.	London County Council	Architect's Department, County Hall, Spring-gardens, S.W.	do.
Stores	Wolverhampton Corporation	G. Green, Borough Engineer, Town Hall, Wolverhampton	Mar. 1
Four Engines	G.N.R. Co., Ireland	T. Morrison, Secretary, Amiens-street Terminus, Dublin	do.
Additions to Infirmary, Northwich	.....	G. E. Bolshaw, Architect, 189, Lord-street, Southport	do.
Slater Wk., Generating St. & Tr'mc'r Shed, Kilmarnock	Electric Committee	R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock	do.
Passenger Station, Cowley, near Uxbridge	G.N.R. Co.	Engineer, Paddington Station	do.
Seven Houses, Greenford, Middlesex	do.	do.	do.
*Sewer Works at St. James's-lane, Muswell Hill	Borough of Hornsey	Borough Engineer, Municipal Offices, Southwood-lane, Highgate, N.	do.
Waiting Rooms, Foot Bridge, etc., Paignton Station	G.W.Ry. Company	Office of Engineer, Plymouth Station	do
*Making-up Roads	Tottenham U.D.C.	Council's Engineer, 712, High-road, Tottenham	do.
Ismay-road, etc., Works	Litherland U.D.C.	A. H. Carter, Surveyor, 25, Sefton-road, Litherland, Lancs.	Mar. 2
Sewers, Farnborough, etc., Kent	Bromley R.D.C.	A. Williams & Son, Engineers, 14, Victoria-street, Westminster, S.W.	do.
*Reconstruction of S.E. Hospital	M.A.B.	T. W. Aldwinckle & Son, 20, Benman-street, London Bridge, S.E.	do.
*Annual Contracts	Boro'. of Hampstead	Boro'. Engineer, Town Hall, Haverstock Hill, N.W.	do.
*Annual Contracts	Borough of Fulham	The Town Hall, Fulham, S.W.	do.
Covered Service Reservoir, The Heath, near Cardiff	Cardiff Corporation	C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff	Mar. 3
*New Post Office, Buxton	Commissioners of H.M. Works, etc.	Postmaster, Buxton	do.
*Children's Homes, Schools, etc., Hutton, Essex	Poplar Union	J. R. Hunt & Co., 181, Queen Victoria-street, E.C.	Mar.
Mixed School for 250 Children, Upper Hill-street	Blaenavon School Board	B. J. Francis, Architect, Abergavenny	do.
Infants' School for 150, Upper Hill-street	do.	do.	do.
*Superstructure of Northern District Post Offic	Commissioners of H.M. Works, etc.	J. Wager, H.M. Office of Works, Storey's Gate, S.W.	do.
*Electric Power Transmission Scheme Buildings	Birmingham Dis. Board and Corp.	J. D. Watson, Engineer, Tyburn, near Birmingham	Mar. 7
*Heating and Hot-Water Supplies, etc.	Dartford Joint Hospital Committee	Robert Marchant, A.R.I.B.A., 28, Theobald's-road, W.C.	do.
Greenheart Lock Gates, Ferriby Sluice, River Humber	Ancholme Drain. & Nav. Commissrs.	A. Atkinson, C.E., Brigg	Mar. 8
*Circular Service Reservoir, etc.	Longleat Estate Office, Warminster	Willcox & Raikes, 63, Temple-row, Birmingham	do.
*Repairs and Materials, Home District	War Department	Royal Engineer Office, 41, Charing Cross, S.W.	Mar. 9
Boiler, Pryme-street Baths, Hulme	Manchester Corporation	City Architect, Town Hall, Manchester	Mar. 15
Purifiers at Gasworks, Great Float, near Birkenhead	Wallasey U.D.C.	J. H. Crowther, Engineer, at the Works	Mar. 17
Steam Roller and Scarifier	Hemel Hempsted Corporation	W. R. Locke, Borough Engineer, Town Hall, Hemel Hempsted	No date.
Alterations, etc., to Rushwood, East Tanfield	Mr. T. W. Nussey	T. Wall, Architect, Studley Estate Offices, Ripon	do.
Repairs & Paint., County Bdgs., Schools, B'dges, etc.	Northumberland County Council	J. A. Bean, County Surveyor, The Moothall, Newcastle-on-Tyne	do.
Free Library, Lowestoft	The Corporation	G. W. Leighton, Architect, 6, Prince's-street, Ipswich	do.
Road Materials	Gainsborough R.D.C.	R. Maxwell, Surveyor, Lea-road, Gainsborough	do.
*Sinking Artesian Well	Messrs. R. & W. Paul, Ltd.	R. & W. Paul, Ltd., Ipswich	do.
Two Detached Residences, Eller Carr, Cullingworth	.....	Moore & Crabtree, Architects, York-chambers, Keighley	do.
Vicarage, Chudleigh Knighton	.....	E. Sedding, Architect, 11, Queen Anne-terrace, Plymouth	do.
*Fitting-up Kitchens, New W'kh'se, Wormw'd Scrubbs	Hammersmith Guardians	Giles, Gough, & Trollope, Archs., 28, Craven-st., Charing Cross, W.C.	do.
*Fitting-up Laundry, New W'khse, Wormwood Scrubbs	do.	do.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*Assistant-Surveyors of Buildings	Commissioners of Public Works	200*l.*—10*l.*—300*l.*	Feb. 16
*Sanitary Inspector	Woolwich Borough Council	120*l.*	Feb. 27
*Assistant Surveyors	Admiralty	£150	No date.

Those marked with an asterisk (*) are advertised in this Number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. xii. *Public Appointments*, xviii.

TENDERS—*Continued from page* 179.

LONDON.—For repairs to electric battery, Crossness outfall, for the London County Council :—
Electrical Power Storage Company, Ltd. £241 5 0

LONDON.—For providing and fixing a new penstock in the Farringdon-road branch of the Fleet sewer, for the London County Council :—
Glenfield & Kennedy £158 | Hunter & English .. 145 | Clark, Bunnet, & Co. 130 | J. Blakeborough & Sons* £108

LONDON.—For two new tail shafts for the ss. *Bazalgette*, for the London County Council :—
John Spencer & Sons, Ltd. £192
The Darlington Forge Company, Ltd.* .. 174

LONDON.—For the erection of the new Kensington Fire Station, for the London County Council :—

J. Burges & Sons	£13,031	0	0
E. Lawrance & Sons	12,688	0	0
H. L. Holloway	12,428	0	0
Stimpson & Co.	12,039	0	0
Leslie & Co., Ltd.	11,950	0	0
Wisdom Brothers	11,930	17	7
Henry Lovatt, Ltd.	11,915	0	0
F. & H. F. Higgs	11,700	0	0
B. E. Nightingale	11,679	0	0
Holloway Brothers	11,603	0	0
Kerridge & Shaw, Cambridge*	10,980	0	0

LONDON.—For paving footways, Charlton-road and River-terrace, and for other work, for the Greenwich Borough Council :—

River-terrace.

A. E. Etheridge (trading as J. E. Etheridge)	£1,365	10	1
A. T. Catley { Norway kerb	1,268	0	0
A. T. Catley { Aberdeen kerb	1,358	0	0
Fry Bros.	1,209	16	0
J. Mowlem & Co., Ltd., of Grosvenor Wharf, Westminster†	1,034	0	0
E. Lamble	1,024	0	0

Charlton-road (Portion).

A. E. Etheridge (trading as J. E. Etheridge)	2,247	3	11
Fry Bros.	2,164	0	0
A. T. Catley { Norway kerb	2,090	0	0
A. T. Catley { Aberdeen kerb	2,230	0	0
J. Mowlem & Co., Ltd.	1,987	0	0
E. Lamble, Leigh-on-Sea, Essex†	1,851	0	0

LONDON.—For the rebuilding of Nos. 111 and 113, Great Titchfield-street. Mr. William Pywell, architect, Hanwell, W. Quantities by Mr. Max Clarke :—
Perkins & Co. .... £5,129 | Whitehead & Co... 4,725 | Minter ..... 4,708 | Walter Wallis .... 4,699 | T. H. Kingerlee & Sons ..... 4,687 | J. Carmichael .... 4,667 | B. E. Nightingale* 4,490

LONDON.—For the construction of a towing-path wall on the south bank of the River Lee near Bowbridge, over the line of the Hackney Wick to Abbey Mills relief sewer, for the London County Council :—
Foster Bros... £1,530 0 0 | T. W. Pedrette 977 0 0 | A. Fasey & Son..... 881 1 8 | J. A. Ewart .. 786 14 0 | J. Dickson .... £647 7 6 | M. Dinnies .... 610 5 0 | Pethick Bros... 553 12 0 | Leggott & Speight* 452 10 0

LONDON.—For drainage and sanitary work and the provision of a recreation room and new washing troughs at the Camden Town Fire Station, for the London County Council :—
F. & F. J. Wood .... £928 | Barrett & Power .... 882 | Marchant & Hirst, 136, Highgate-rd., N.W.* £875

LONDON.—For the construction of Rotherhithe Tunnel, for the London County Council :—

J. C. Starkey	£1,929,051	13	7
J. Mowlem & Co.	1,463,477	0	0
Pethick Brothers	1,187,648	10	3
J. B. Squire & Co.	1,168,375	0	0
S. Pearson & Son	1,120,978	9	2
Price & Reeves, 15, Great George-street, London* ..	1,088,484	16	1
W. Kennedy	987,885	17	0
J. Smith & Co.	958,307	5	6

[Chief engineer's estimate is £1,233,349 9s. 4d.]

MANOR PARK.—For alterations and additions at the Coach and Horses Public House, Romford-road, Manor Park., for Mr. C. R. Graham. Mr. J. M. H. Gladwell, architect, Essex House, High-street, Stratford, E. Quantities by Mr. L. E. G. Collins, 31, Great St. Helens, E.C.:—

R. G. Walters	£3,750	Todd & Newman ..	£3,137
T. H. Jackson & Co.	3,700	W. J. Maddison ..	3,085
Harris & Wardrop..	3,289	Hibberd Bros., Ltd.*	2,915

MERRYMEETING.—For wall, gates and piers, carriageways, etc., at new cemetery, for Rathdrum and Wicklow Joint Burial Board. Mr. J. Pansing, Engineer, Town Hall, Wicklow:—

James & M. Clarke	£1,443	Alex. McGowan, Arklow*	£998
Kinlen Bros.	1,239		

MERRYMEETING.—For two mortuary chapels and a caretaker's house, at new cemetery at Merrymeeting, for Rathdrum and Wicklow Joint Burial Board. Mr. J. Pansing, Engineer, Town Hall, Wicklow:—

William Clarke ..	£812 10	Alex. McGowan ..	£675 0
James & M. Clarke	693 0	Kinlen Bros.	635 0

NEW FRODINGHAM.—For making-up Lygon-street, Cemetery-road, etc., New Brumby, for the Brumby and Frodingham Urban District Council. Mr. J. Green, Surveyor, Council Offices, New Frodingham. Quantities by Surveyor:—

W. A. S. Taylor	£334 7 6	H. Parry & Sons	£291 11 8
B. Roberts ..	331 3 8	S. Charlsworth, Scunthorpe*	220 0 0
Holliday & Horneby ..	308 5 3		

[Surveyor's estimate, £312. 3s. 10d.].

OLDBURY.—For the construction of detritus and screening chambers, storage tanks, pumping station, etc., in connexion with Warley sewerage, for the Oldbury Urban District Council. Mr. J. T. Eayrs, M.Inst.C.E., 39, Corporation-street, Birmingham:—

J. Mackay	£1,998 16 2	J. Dallow & Sons	£1,543 10 0
E. Boore	1,917 12 5	G. E. Jackson..	1,481 4 5
T. Bagnall & Sons	1,705 15 3	E. Hadley & Sons, Old Hill, Staffordshire*	1,381 6 6
H. Dorse & Co.	1,633 2 3		

PENRITH.—For the erection of two bridges, one at Lambeck, near Blencow, the other near Gill, Greystoke, for the Penrith Rural District Council. Mr. W. Lee, Surveyor:—

Lambeck Bridge.

D. Gardiner ..	£549 17 0	Millward & Co., Carlisle* ..	£244 9 8
T. Telfer	300 11 0		

Gill Bridge.

D. Gardiner ..	£374 19 1	Millward & Co., Carlisle* ..	£153 3 2
J. Lewthwaite.	266 9 11		
T. Telfer	233 7 6		

PURLEY.—For proposed two houses to be erected in Brighton-road, Purley. Mr. Frank Windsor, architect, 1, High-street, Croydon:—

Pearson & Co., Park-street, Croydon* £1,470

RAMSBOTTOM.—For stoneware pipe sewer in Garden-street, Athol-street, Crow-lane, and Factory-street, for the Urban District Council. Mr. J. Diggle, C.E., Hind Hill-street, Heywood:—

Thos. Turner, Heywood* £154 5 6

RAMSGATE.—For new free library, Clarendon-gardens, for the Corporation. Mr. S. D. Adshead, architect, 46, Great Russell-street, London:—

Paramor & Sons £7,250	0 0	G. Browning ..£6,636	0 0
D. Parkins.... 7,250	0 0	F. G. Minter .. 6,597	0 0
Gann & Co. .. 7,065	0 0	Strange & Sons 6,561	0 0
J. H. Forewalk 7,058	19 2	A. E. Goodbourn 6,516	4 9
E. J. Newby .. 6,997	0 0	W. W. Martin.. 6,436	0 0
W. J. Adcock.. 6,982	4 0	Huckell & Grimbly .. 6,270	0 0
Henry Kent .. 6,950	0 0	G. H. Denne & Son 6,190	0 0
Foster & Dicksee 6,838	0 0		
T. T. Denne .. 6,769	0 0		

SURBITON.—For alterations to be carried out at The Cottage, Lovelace-road, Surbiton, for Dr. Arthur S. Taylor. Messrs. Carter & Ashworth, architects, 86, Eden-street, Kingston-on-Thames. Quantities by architects:—

E. Tomkinson ..	£714 0 0	G. F. Havell....	£622 0 0
McDonald Bros...	670 6 0	F. Hawkey, Surbiton*	590 0 0
Aldridge & Sons.	654 0 0		
Stokes & Sons ..	650 5 0		

TOLWORTH.—For drainage and other sanitary works at Tolworth Joint Hospital, for the Tolworth Joint Hospital Board. Messrs. Carter & Ashworth, architects, 86, Eden-street, Kingston-on-Thames. Quantities by architects:—

Offer & Sons....£653	0 0	Scase & Son....£465	17 0
J. Peattie 615	0 0	E. Tomkinson .. 445	0 0
G. R. Welch.... 595	0 0	J. Turner 438	0 0
Speeckley & Smith 571	0 0	J. W. Dean, Ltd. 436	0 0
Finch & Co..... 528	0 0	Lane & Son 428	12 0
Kavanagh & Co.. 495	19 0	Wheatley & Sons 410	0 0
Cunningham, Forbes, & Co.. 490	0 0	I. F. Palmer, Surbiton-hill*. 409	15 7
Aldridge & Sons. 490	0 0	R. Atkinson 400	0 0
		Davis & Bennett 373	1 8

WEST HAM.—For the erection of stabling at Bath-road, West Ham, for Mr. F. Baker. Mr. J. M. H. Gladwell, architect. Essex House, High-street, Stratford, E.:—

H. Evans Jones	£1,039	W. J. Maddison*..	£786
H. Bishop	864		

WOKINGHAM.—For 1,150 yards of surface water and soil sewers, etc., for the Town Council. Mr. C. W. Marks, Borough Engineer, Town Hall, Wokingham:—

Woods £1,519	8 4	Cunningham & Forbes ..£1,016	1 3
Langman .. 1,234	17 6	Dean, Ltd. .. 965	8 6
T. Talbot.... 1,225	2 0	T. Turner .. 951	16 9
T. Free & Sons 1,184	14 10	S. Lewis & Son 889	16 3
W. L. Meredith 1,130	11 0	Champnis .. 808	5 4
Collier & Catley 1,087	13 8	J. B. Seward, Wokingham* 768	0 0

BASNETT-ROAD SCHOOL, BATTERSEA.—In the list of tenders for this school published in our last issue, p. 151, the amount of the tender of Messrs. Edwards & Medway, of Kennington, should have been £4,309, and *not* £3,578.

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